

ACTA CYTOLOGICA

The Official Periodical (Circular Letter) of
THE INTERNATIONAL ACADEMY OF GYNECOLOGICAL CYTOLOGY

Organe Officiel (Lettre Circulaire) de
L'ACADEMIE INTERNATIONALE DE CYTOLOGIE GYNECOLOGIQUE

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**THE INTERNATIONAL ACADEMY OF GYNECOLOGICAL CYTOLOGY
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INTERNATIONALE AKADEMIE FÜR GYNÄKOLOGISCHE ZYTOLOGIE
ACADEMIA INTERNACIONAL DE CITOLOGIA GINECOLOGICA**

FOUNDED IN BRUSSELS, BELGIUM, IN JULY, 1957

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All communications pertaining to the International Academy of Gynecological Cytology and membership therein should be directed to the Office of the Secretary: 666 Elm Street, Buffalo 3, New York, U.S.A.

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BUSINESS MATTERS OF THE INTERNATIONAL ACADEMY

FROM THE OFFICE OF THE PRESIDENT

In accordance with the Bylaws of the International Academy of Gynecological Cytology, Article I, Section 3, an

INTERNATIONAL MEETING ON EXFOLIATIVE CYTOLOGY

is being planned for the second half of 1960 or the year 1961. The exact date and the place of the meeting have not yet been determined.

Extracts from the Bylaws concerning the Scientific Session (Article I, Section 10):

"...Papers presented at the Scientific Session shall be original papers which have never been presented or published. Material which has already been published or presented elsewhere may be considered in panel discussions. Fifty per cent of the Scientific Session shall be devoted to original papers, and fifty per cent of the time to panel discussions...."

For details concerning the International Meeting write to Dr. Ruth M. Graham, Roswell Park Memorial Institute, 666 Elm Street, Buffalo 3, New York, U. S. A.

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In answer to many inquiries, some pertinent data concerning the International Academy of Gynecological Cytology and membership in the Academy follow:

Extracts from the **CONSTITUTION**

ARTICLE I

NAME

SECTION 1.—The name of this organization shall be the INTERNATIONAL ACADEMY OF GYNECOLOGICAL CYTOLOGY.

SEC. 2.—This Academy is founded as an international, scientific, non-profit organization of obstetrical and gynecological cytologists.

ARTICLE II

OBJECTS

SECTION 1.—The objects of the Academy shall be:

- (a) To encourage cooperation among those persons who are actively engaged in the practice of obstetrical and gynecological cytology;
- (b) To foster and facilitate the international exchange of knowledge and information on specialized problems of exfoliative cytology in the fields of obstetrics and gynecology;
- (c) To standardize terminology;
- (d) To stimulate the development of all phases of exfoliative cytology as applied to obstetrics and gynecology; and
- (e) To encourage research in obstetrical and gynecological cytology.

ARTICLE V

MEMBERSHIP

SECTION 1. *Types of members.*—The membership of the Academy shall be composed of the following classes of members:

- (1) Honorary President
- (2) Active Members
- (3) Members of the Board of Consultants
- (4) Associate Members
- (5) Honorary Members

SEC. 2.—The Voting Members of the Academy shall be the Active Members and the Members of the Board of Consultants.

SEC. 3. *Voting Members.*—The number of Voting Members of the Academy shall be restricted to one hundred (100).

SEC. 4.—Two-thirds (2/3ds) of the Voting Members shall be Active Members; one-third (1/3d) shall be Members of the Board of Consultants. This proportionate relationship shall always be maintained.

SEC. 5. *Associate Members.*—The number of Associate Members shall be restricted to forty (40).

Sections 1, 2, and 4 of this Article shall at no time be amended or changed in any form or manner.

ARTICLE VI

QUALIFICATIONS FOR MEMBERSHIP

SECTION 1.—Admission to all classes of membership in the Academy, except that of the members of the Founders' Committee, shall be by invitation of the Executive Council.

Active Members

SEC. 3.—Active membership in the Academy may be offered to those individuals with the following qualifications:

SUBSEC. (1).—Candidates must be actively engaged in the practice of exfoliative cytology in the fields of obstetrics and gynecology and must personally examine a minimum of one thousand (1,000) cytological specimens per annum.

SUBSEC. (2).—Candidates must have been engaged in the practice of exfoliative cytology, as described in Section 3, Subsection (1) of this Article, for at least three (3) years prior to nomination.

SUBSEC. (3).—Candidates must have been engaged in the teaching of exfoliative cytology for at least two (2) years.

SUBSEC. (4).—Candidates must be associated with a medical school, a teaching hospital, or a comparable research institution at the time of nomination and admission to the Active Membership of the Academy.

SUBSEC. (5).—Candidates must have a major interest in gynecological and obstetrical cytology and in its development.

SUBSEC. (6).—Candidates must have contributed scientific work in the field of obstetrical and gynecological cytology, and must have been the author or co-author of at least three (3) papers on exfoliative cytology. Papers accepted for publication may be considered as published.

SEC. 4.—No exemptions shall be made to the above qualifications. Candidates shall be required to file signed affidavits to ascertain that they fulfil the above qualifications of Active Membership before the Executive Council shall invite the candidate for Active Membership.

SEC. 5.—Active Members shall be required to submit to the Secretary signed affidavits by January thirty-first (31st) of every *third* calendar year, thus certifying that they fulfilled the requirements of Section 3, Subsection (1) of this Article during the preceding year. Active Members who did not submit this affidavit by January thirty-first (31st) shall be considered as not having fulfilled the requirements for Active Membership during the preceding calendar year.

Associate Members

SEC. 10.—Candidates may be nominated for Associate Membership in the Academy if they fulfil at least four (4) out of the six (6) qualifications for Active Membership, as stated in Section 3 of this Article.

SEC. 11.—Associate Members may be considered for Active Membership upon fulfilling the additional requirements when there is a vacancy on the Active Membership list.

SEC. 13.—Active Members who for more than three (3) consecutive years are not actively engaged in the practice of exfoliative cytology, and/or who do not examine personally one thousand (1,000) cytological specimens per annum for three (3) consecutive years as required in Section 3, Subsection (1) of this Article, shall automatically become Honorary Members.

Sections 1, 2, 3, 4, 5, 6, 7, 8, 10, and 13 of this Article shall at no time be amended or changed in any form or manner.

ARTICLE X

MAINTENANCE OF MEMBERSHIP AND DISCIPLINE

SECTION 1.—The Executive Council may, on its own motion, or on a written statement signed by a complainant, take cognizance of any breach of the rules and regulations of the Academy, or of any unprofessional conduct on the part of the Member, or of any behavior contrary to the purpose of the Academy, or of any conduct which threatens the order, functions, peace, reputation, and dignity of the Academy, or of any Member who has been found guilty of a felony or convicted of subversive activity by the proper authorities through conduct which is inimical to the interests and contrary to the Constitution of the country in which the Member is a permanent resident.

SEC. 2.—No hearing before the Executive Council shall be held unless the accused Member is served notice of the hearing with a written statement of the charges against him, at least thirty (30) days prior to the hearing, this notice and statement to be sent by registered mail to the last address given by the Member. The hearing may be held by mail if the case makes it mandatory that the Executive Council act as soon as possible.

SEC. 3.—If, after hearing the evidence presented, the Executive Council, by majority vote, finds the Member guilty as charged, the Executive Council may reprimand him, suspend him from membership, request his resignation, or expel him.

SEC. 4.—Any Member disciplined, suspended, or expelled by the Executive Council shall be accorded the right of appeal to the combined board, consisting of the Members of the Executive Council and the International Board of Delegates. Such a hearing shall take place only at the time of the meeting of the Academy. However, no such hearing before the combined boards shall be held unless the accused Member is served notice of the date, hour, and place of the meeting, in writing, sent by registered mail to the last address given by the Member, at least thirty (30) days prior to the hearing. The accused shall have the right of representation by a voting Member in good standing of the Academy who will act as his counsel at such hearing.

SEC. 5.—If a Member shall have been expelled or suspended from membership, the Academy may publish notice of such expulsion or suspension in the circular letter of the Academy and/or in the medical journals.

SEC. 7.—Any Member of the Academy can be immediately and without the right of appeal expelled if the national medical association or one of the two greatest gynecological societies or one of the two greatest societies of pathologists in the country in which this Member is a permanent resident would request in an official statement, issued by their respective executive boards or presidents, that this Member be expelled. The Executive Council of the Academy by majority vote may expel this Member and may publish this decision in a circular letter.

Extracts from the BY-LAWS

ARTICLE V

NOMINATIONS FOR MEMBERSHIP

SECTION 1.—Two Active Members, in good standing, may submit to the Secretary for nomination to the Academy the name of any individual who they feel is qualified for admission to the Academy.

SEC. 2.—The candidate shall be screened by the Executive Council. If the majority of the Executive Council approve the candidate, the name and information concerning the candidate shall be submitted to the Voting Members of the Academy, who, by majority vote, shall authorize the Executive Council to invite the candidate for membership.

WHO'S WHO IN THE ACADEMY

The "Who's Who in the Academy" will publish in every issue of ACTA CYTOLOGICA biographies of some of the Members of the International Academy of Gynecological Cytology.

INFORMATIONS BIOGRAPHIQUES

Cette rubrique publiera dans chaque issue des ACTA CYTOLOGICA des biographies sur quelques Membres de l'Académie Internationale de Cytologie Gynécologique.

BIOGRAPIEN VON MITGLIEDERN DER AKADEMIE

In diesem Abschnitt der ACTA CYTOLOGICA werden in jeder Ausgabe Biographien von Mitgliedern der Internationalen Akademie für Gynäkologische Zytologie zum Abdruck gebracht.

BIOGRAFIAS

La sección BIOGRAFIAS publicará en cada número de ACTA CYTOLOGICA biografías de algunos de los Miembros de la Academia Internacional de Citología Ginecológica.



HANS KLAUS ZINSER
THE PRESIDENT OF THE ACADEMY

The ingenious idea of George N. Papanicolaou, whose name is inseparably connected with cytology and who is universally recognized as the Dean of Cytology, lead to the development of a method of examination which is of paramount importance in the early diagnosis of uterine carcinoma, and in endocrinology. In Germany the ideas of Papanicolaou were used as early as 1938 by Murray and Herrnberger, whose studies on cytohormonal diagnoses did not, however, find their well deserved attention. Approximately ten years later, after the Second World War, the German scientists had the opportunity of becoming more thoroughly acquainted with the achievements abroad in the field of gynecological cytology. Numerous University departments took up the Papanicolaou technique and reported with many publications the various problems of gynecological cytology. It was especially the merit of certain well-known clinicians that the method by Papanicolaou achieved general usage so rapidly in Germany. Due to the direction of Drs. W. Bickenbach of Munich, G. Döderlein of Jena, C. Kaufmann of Cologne, H. Naujoks of Frankfurt, E. Philipp of Kiel and H. Runge of Heidelberg and their co-workers, the new diagnostic technique received the recognition which it holds today - an integral part of the gynecological diagnostic procedure.

In Germany, the technique of Papanicolaou was originally introduced after the Second World War by Dr. H. Igel in a presentation at the German Gynecological Congress in the year 1947, in which he drew the attention of the gynecologists to the field of vaginal cytology and its usage in early cancer diagnosis. This presentation stimulated the introduction of the technique into research work and later as a routine diagnostic procedure in the Department of Obstetrics and Gynecology of the University of Jena.

Hans Klaus Zinser was born in the year 1912 in the province of Posen. After completion of his medical studies, Dr. Zinser came to the University Hospitals of Jena, to complete there his training as a gynecologist and obstetrician. For many years the University of Jena (under the Chairmanship of Dr. Gustav Döderlein) had been especially concerned with the early diagnosis of carcinoma, gaining much experience with routine diagnosis by means of the colposcope, as introduced by Dr. Hinselmann. Dr. Hans Klaus Zinser had worked previously in cytology, studying tumor cells of uterine and peritoneal origin under the phase microscope. So when cytology was introduced as a routine technique in addition to the colposcopic examination, Dr. Zinser was placed in charge of the program at the University of Jena. He took up the new field of cancer diagnosis with great zeal, so that in the year 1948, the Medical Faculty bestowed upon him the title of Dozent in recognition of his work.

While associated with the University of Jena, Dr. Zinser published several articles on the cytological diagnosis on fresh cells under the phase microscope. With both cytology and colposcopy routinely

performed, Dr. Zinser could very well compare the efficiency of both techniques and define their limitations. At the time, the files of the hospital contained material from over 12 years of routine colposcopic examinations. It was shown that cytology was instrumental in the early detection of a considerable percentage of additional cases. The cytological technique was proven clearly superior to the colposcopic examination. Only recently, Dr. Zinser again stressed, however, that the colposcopic examination retains its importance for early cancer detection because approximately 70% of all ectocervical lesions may be detected with colposcopy alone. The special value of exfoliative cytology, according to Dr. Zinser, is as an additional test on those cases in which the colposcopic examinations revealed uncharacteristic findings, and further, in the detection of a carcinoma in situ which might be covered by the so-called matrix area, and in the diagnosis of endocervical carcinoma in situ or incipient invasive carcinoma. An important conclusion derived from Dr. Zinser's studies was that optimal results cannot be expected from either clinical or colposcopic examinations alone and that cytological examinations have to be performed in order to guarantee the detection of most lesions of the uterine cervix.

In the meantime Dr. Zinser published numerous papers in other clinical fields, among which are: a section on urology in the textbook by Seitz-Amreich; a publication on problems in toxicosis; and contribution to other textbooks. In the year 1952, Dr. Hans Klaus Zinser published, in co-operation with Dr. George L. Wied, a monograph on gynecological cytology which presented a preliminary summary of his cytological experiences and which contributed considerably to the propagation and recognition of cytology among the German medical profession. In the year 1957, this monograph appeared in its second edition, enlarged and improved with an extensive portion of photomicrographs. This second edition was prepared with the cooperation of Dr. Albrecht Schmitt.

In 1952, when Dr. Hans Klaus Zinser became the Chairman of the University Department of Obstetrics and Gynecology in Greifswald, he not only introduced exfoliative cytology as a routine procedure in this hospital, but made the diagnostic technique also available to outside physicians. The initial reservations against the usage of the technique were soon overcome as the results showed the value of the method for the practicing physician. In addition to this Dr. Zinser also started a cytochemical laboratory for research purposes. These cytochemical examinations were concerned mainly with the Feulgen reaction, the karyological technique by Cusmano, RNA determinations (Pyronin, vital staining with Janus Green), examination of carbohydrates in the cells, and, finally, the usefulness of triphenyl tetrazolium-chloride in cytochemistry. These staining techniques did not yield specific results; however, Dr. Zinser did achieve better results with luminescence microscopy. He performed supravital stainings with Primolin, Trypaflavine, Acridin Orange and Coriphosphine. According to Dr. Zinser's findings, luminescence microscopy has not only theoretical value but deserves to be explored further.

In the year 1955, Dr. Zinser moved to Cologne and became the Chairman of the Gynecological and Obstetrical Service of the Evangelical Hospital of Cologne-Lindenthal. After he was associated for a year with the University Department of Cologne (Chairman: Carl Kaufmann, M.D.), Dr. Zinser took charge of the Cytological Central Laboratory of the State of Nordrhein-Westfalen, located in Evangelical Hospital. In this capacity he has had the opportunity to evaluate the cytological specimens of numerous cancer detection centers from the entire area of this State and to work on modern problems in exfoliative cytology. Dr. Hans Klaus Zinser is now actively engaged in a training program for cytologists in the field of gynecological cytology, in the spirit of Dr. George N. Papanicolaou.

by Friedrich F. Bachmann

LIST OF PUBLICATIONS BY HANS KLAUS ZINSER

1. *Trichomonas vaginalis* beim Menstruationscyclus Geburtsh. u. Frauenhk. No. 5: 188, 1941
2. Die Trichomonadenkolpitis. Hippokrates No 3: 52, 1942
3. Ein neuer Hinweis zur Diagnosestellung der *Trichomonas vaginalis* Zbl. Gynäk. No 2: 1, 1947
4. Bewertung der Lichtbogenprobe bei der Differentialdiagnose der Adnextumoren des weiblichen Genitale. Der Chirurg, No 1: 1, 1946
5. Biologie der *Trichomonas vaginalis* und Therapie der Trichomonadenkolpitis. Ber. d. Tagung d. Thür. Ges. f. Gyn. Nov. 1947
6. Klinisch-mikroskopische Studien mit dem Phasenkontrast-verfahren. Jenaer Zeiss-Jahrbuch 145, 1950
7. Beobachtungen bei einem Fall von Doppelblase. Zbl. Gynäk. No 2: 168, 1948
8. Das Odem bei der Schwangerschaftstoxikose. Zbl. Gynäk. No 9: 930, 1948
9. Studien über die Serumeiweissverhältnisse nach gynakologischen Operationen. Z. Geburtsh. 130: 7, 1948
10. Über Eiweissverluste bei gynakologischen Operationen. Zbl. Gynäk. No 12 a: 1471, and Zbl. Gynäk. No 11: 1948

11. Über qualitative Veränderungen der Serumeiweisskörper nach gynakologischen Operationen. Z. Geburtsh. 131: 123, 1949 and Zbl. Gynäk. No 11: 1126, 1948
12. Plasmaeiweissregulation in der postoperativen Phase. Zbl. Gynäk. No 9: 897, 1949
13. Vulva- und Scheidentuberkulose. Sitzungsber. d. Ges.f. Dermat. u. Venerol. i. Thür. 2. April 1949
14. Klinische Erfahrungen mit Methylergobasintratrat als Wehenmittel. Mediz. Rundschau, 3: No 15, 1949
15. Dezentralisierte Krebsbekämpfung an der Univ. - Frauen-klinik Jena. Arch. f. Geschwulstforschung, 1: 214, 1949
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RUTH MOORE GRAHAM
THE SECRETARY-TREASURER OF THE ACADEMY

A dedicated researcher, an inspiring teacher, a talented writer, Ruth M. Graham has done much to further the acceptance of cytology as a cancer detection technique.

Ruth Moore Graham was born March 11, 1917, in Paris, Idaho, the daughter of a general practitioner. Her school years were spent in Idaho and in Salt Lake City at the Westminster Collegiate Institute. For one year, she attended George Washington University in Washington, D. C., planning a major in political science. Transferring to the University of Michigan at Ann Arbor, Mrs. Graham received the degree of Bachelor of Science in zoology in 1938. She then studied for one year at Simmons College in Boston in a graduate course in laboratory technology.

Her first position was at the Huntington Memorial Hospital in Boston, a cancer research hospital associated with Harvard University. She worked as a hematology technician under J. C. Aub, studying abnormal hematologic cytology. She received training from Geneva Daland at the Thorndike Laboratory at Boston City Hospital — the laboratory of Minot and Castle. While at Huntington Memorial, Mrs. Graham did some of the first research on the use of chemotherapy in malignancy, observing that patients with leukemia showed definite reduction in the level of circulating leukemic cells when treated with sulfapyridine. Her first published paper was based on this study.

In the summer of 1940 Ruth Moore was married to John Graham, who had just received an M. D. from Harvard Medical School, and the couple established their home in San Francisco. Mrs. Graham worked for six months in the coroner's office preparing histologic specimens and later worked in the Department of Pathology at the San Francisco County Hospital.

Returning to Boston in 1941, Mrs. Graham worked at the Massachusetts General Hospital in J. H. Means' thyroid laboratory. Her position was that of research assistant, Department of Medicine, Harvard Medical School. She spent most of her time doing original research on respiratory enzymes.

At this time Mrs. Graham received her introduction to the field of exfoliative cytology. Maurice Fremont-Smith, impressed by an article written by George N. Papanicolaou, showed the article to J. V. Meigs, who thought the method would be worth trying. They chose Ruth Graham to investigate the technique. She read the article, then spent a week visiting the laboratories of Ephraim Shorr and Papanicolaou. Highlighting her visit was the one morning she spent talking with Papanicolaou about the examination of smears. Mrs. Graham returned to Boston and began the collection and examination of smears. Apart from the interest of Dr. Meigs, her work attracted little attention.

Ruth Graham continued the examination of smears for more than a year. One day Dr. Meigs was performing hysterectomies on two patients, both of whom Mrs. Graham had found to have positive vaginal smears. The hysterectomies were for a fibroid uterus in one case and endometriosis in the second. After removal of the first specimen, Dr. Meigs called Mrs. Graham to the operating room, showed her the normal-appearing uterus, and demanded, "Where is the cancer?" Having the courage of her convictions, Mrs. Graham replied, "It must be there; there were malignant cells in the smear." Meigs made no reply, but proceeded with the second hysterectomy. Upon removal of this second benign-appearing uterus, Mrs. Graham was again called to the operating room and the interchange was repeated. Meigs was quite distressed, saying that he would be the laughing stock of the hospital. However, subsequent histologic examination of the specimens confirmed the diagnosis of malignancy in each case, both patients having had in situ lesions of the cervix. The accuracy of the cytologic method in these two cases convinced Meigs that the method was definitely valuable. Publication of the results of work done at the Massachusetts General Hospital contributed to the widespread acceptance of the use of the vaginal smear as a practical and effective tool in the detection of early carcinoma of the uterine cervix.

Shortly after the publication of this paper, Dr. Meigs and Mrs. Graham were invited by the American Medical Association to prepare an exhibit on cytology. They agreed to do so if Dr. Papanicolaou also participated, and the joint exhibition received a certificate of merit.

The method was rapidly becoming more popular and Mrs. Graham felt that a textbook was needed to provide a systematic coverage of the subject for teaching purposes. Dr. Papanicolaou had prepared a monograph on cytology of the female genital tract, but Mrs. Graham thought there was also a need for a textbook including the application of the technique to other secretions such as gastric, sputums, bronchial washings, urines, and peritoneal and pleural fluids. She conceived the format of such a book with the purpose of maximum value from a teaching and reference viewpoint. The book would have a colored drawing and a colored photomicrograph of the same cells under the same magnification, and a low power view of the same field, to be accompanied by an explanatory legend on the same or facing page.

Mrs. Graham was fortunate at that time in having a group of young, enthusiastic, and talented assistants who did the photomicrography and the drawings while she wrote the text and organized the publication. The writing of this book was laborious and exacting. The number of words was limited by the page size and the space to be occupied by the photographs and drawings, and the exact number of words had to be counted for each page of the entire text. This book, published by Saunders and Company, has found wide acceptance. A Japanese translation has been made and a Spanish translation is in progress. The book is now in its second printing in this country.

In 1947 Ruth Graham published her first studies on the effect of radiation on cells as observed in the vaginal smear. Her first observations of this effect were made during an attempt to classify radiation changes observed in smears because of the difficulty experienced in differentiating such changes from the changes of malignancy. During the course of this study, Mrs. Graham noted to her astonishment that the majority of patients with definite radiation changes responded well clinically and showed no signs of recurrence. Patients who exhibited minimal changes in the smears during the course of their radiotherapy seemed to follow a rapid downhill course and many of them died after a brief interval.

The first confirmation of this work on radiation changes as a tool in prognosis came from A. M. Nielson in Copenhagen, and subsequently by J. C. de Laguna in Mexico City, O. Kjellgren of Goteborg, and O. Messell of Oslo. The new prognostic method gained acceptance slowly, receiving added impetus from Stanley Way of Newcastle-on-Tyne. On his initial visit to the Vincent Laboratory in Boston, Mr. Way produced two slides from radiation patients and demanded abruptly of Mrs. Graham the prognosis of each patient. Annoyed, she examined the smears, proclaimed one good and the other poor. She was right in both cases, and Mr. Way has been a staunch supporter of the method since that time.

The Sensitization Response, or SR, was observed by Mrs. Graham during her early radiation studies when she was attempting to evaluate the radiation changes in a quantitative manner. As she had become familiar with the names and the histories of the patients in this series, her assistants in the laboratory pasted false labels on the slides and kept the key so that Mrs. Graham counted the slides in a blind fashion. Upon completion of the counts, she found to her chagrin that she had counted significant radiation changes in some of the pre-treatment smears. This was a discouraging development until she noted that the patients exhibiting these pre-treatment changes had benefited dramatically from radiotherapy. The patients whose smears showed no such changes followed a less favorable clinical course. These observations have resulted in a method of prognosis almost as accurate as counts made on patients during treatment. Subsequently, Mrs. Graham found the converse was also true of SR; patients with no SR did well when treated surgically, while patients with pronounced SR developed recurrences following surgery. This technique provides a valuable tool for the clinician as a practical method of differentiating surgical candidates from radiosensitive patients.

The Grahams next embarked upon a long series of experiments in an attempt to apply these cytologic criteria to the management of patients with primary carcinoma of the cervix. They began a small series in Boston, which included an attempt to improve the cytologic and clinical response of patients receiving radiotherapy by the administration of supplemental agents. From a series of animal experiments they found that either of two agents — alpha-tocopherol and testosterone propionate — altered the cytologic response of animals exposed to ionizing radiation. They hoped this knowledge would make it possible to improve the sensitivity of patients to radiotherapy and thus improve the cure rate. In 1952 - 53, the Grahams studied a series of patients treated radiologically at the Radiumhemmet in Stockholm by Dr. H. -L. Kottmeier. Patients with poor cytologic responses were given supplemental medication, and the Grahams found it was possible to convert 2/3 of the poor responses to good. The four-year results of this series suggest a parallel improvement in the clinical course of the patients thus treated.

The program involving the use of cytology in the selection of the method of treatment and the use of supplemental agents was expanded upon the Grahams' return to Boston. They embarked upon an extensive series which was continued for two and a half years in Boston, then transferred to the Roswell Park Memorial Institute in Buffalo, New York. From her observations of the pre- and post-treatment smears of these patients, Mrs. Graham realized that there is some parallelism between SR and the appearance of histiocytes in the vaginal smear. This finding led to various animal and human experiments which suggest that SR is a manifestation of resistance on the part of the host to the tumor. Dr. and Mrs. Graham are currently conducting studies to elucidate the mechanism of the SR in conjunction with the role of immunity in cancer.

Mrs. Graham has also been recognized for her studies of epithelial changes in pernicious anemia. With M. Rheault she demonstrated that epithelial cells of patients with pernicious anemia increase in size and that these changes were reversible, disappearing when the disease was in remission. These observations interested hematologists as the size increase paralleled the macrocytosis of the red blood cells of such patients.

During her career, Mrs. Graham has been the recipient of numerous honors and has held a number of academic positions. From 1942 to 1949 she was the chief of the Vincent Memorial Laboratory in the Gynecologic Service of the Massachusetts General Hospital. In 1945 she received jointly with Dr. Papanicolaou the American Medical Association Certificate of Merit for the exhibit of "Vaginal Smear in the Diagnosis of Cancer." In 1947 she received Honorable Mention from the American Medical Association for the exhibit on "Cytologic Prognosis in Patients with Cancer of the Cervix Treated by Irradiation." In 1949 - 50, she held the position of Instructor in Pathology at the University of Oregon Medical School, and from 1951 to 1956 she was the Director of the Vincent Cytology Laboratory in Boston and Clinical Cytologist on the staff of the Massachusetts General Hospital. Also during these years she was a Research Associate in the Department of Gynecology of Harvard Medical School. Under her direction the Vincent Laboratory handled approximately 12,000 specimens a year, including cytologic examination of gastric secretions, sputums, bronchial washings, urines, and peritoneal and pleural fluids. The laboratory also handled an equal volume of research slides. Mrs. Graham was Lecturer, Department of Gynecology, University of Edinburgh, in 1953, and in the same year was the John Shields Fairbairn Lecturer at the Royal College of Obstetricians and Gynecologists in London. She received the honorary degree of Doctor of Science from the Women's Medical College of Pennsylvania in 1954, and in 1955 the Wien Award for "Outstanding research in cancer cytology." In 1957 she became an Associate Cancer Research Scientist at Roswell Park Memorial Institute, the post she holds at present.

Soft-spoken and unassuming, Mrs. Graham's sincere devotion to her work has been a constant source of inspiration to her many students who have come to her laboratory from all over the world — then returned to their native lands to teach others the value of cytology as a tool in cancer detection.

Outside the field of cancer research, Mrs. Graham is the mother of two children and enjoys fishing and gardening as hobbies. Another of her interests is French literature, and she is currently studying the Russian language.

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LETTERS TO THE EDITOR

OCCURRENCE OF DYSKARYOTIC CELLS IN TRICHOMONAS INFESTATION

TO THE EDITOR:

Reference is made to the paper by Jean de Brux and H. Wenner-Mangen, in ACTA CYTOLOGICA, Vol. 1, No. 1, p. 37, 1957.

In cases of Trichomonas vaginitis we could observe in 24 out of 33 cases (in addition to the cytological changes which do not present any diagnostic problems) typical dyskaryotic cells which were grouped in Class III. In 9 cases we found such marked epithelial atypia in patients with Trichomonas vaginitis that it seemed justifiable to group them in Class IV or V. Biopsies were performed in those cases which did not regress cytologically after anti-inflammatory therapy (mostly with Albothyl). From 8 patients on whom we performed biopsies we detected one with a small, invasive cervical carcinoma; in 5 patients, lesions which were classified histologically as carcinoma in situ, and in 2 cases epidermizations of glands in healing erosions. We disagree with the opinion of Bechtold and Reicher¹ and believe that it is not always possible to distinguish epithelial atypia in Trichomonas vaginitis from "true" carcinoma in situ by the presence or absence of a prosoplastic tendency of growth. Our Table shows that among 18 cases which exhibited marked epithelial atypia (positive or highly suspicious smears), 4 cases with histologically verified atypical lesions (carcinoma in situ) showed regression under intensive conservative therapy.

Table
CELLULAR ATYPIA AND TRICHOMONAS INFECTION
An evaluation of 2,668 smears taken during 1955-1957

	Total Number Suspicious and Positive Smears	Classification into	
		Class III	Classes IV & V
Cytology	368 (13.8%)	214 (8%)	154 (5.8%)
Trichomonas Infection	33 (9%)	24 (6.5%)	9 (2.5%)
Colposcopy (transformation zones, ground, leukoplakia, fielding)	12	7	5
Histology			
Healing erosions	2	2	
"Carcinoma in Situ"	5	1	4
Invasive Cervical Carcinoma	1	1	
After therapy (Albothyl)	15	10	5

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DEFINITION OF DYSKARYOSIS

TO THE EDITOR:

I have been very much impressed by the definition of "dyskaryosis" by Dr. Ruth M. Graham in *ACTA CYTOLOGICA*, Vol. 1, No. 1, 1957.

As far as I understand it, the definitions of Drs. George N. Papanicolaou (*Ann. Int. Med.* 31:661, 1949) and Ruth M. Graham (*ACTA CYTOLOGICA*, 1:23, 1957) differ very little. It seems that the main difference is that Ruth Graham introduced an arbitrary cytometric standard ("If the distance from the border of the cell is greater than the maximum diameter of the nucleus, it is considered a dyskaryotic cell. If this distance is less than the maximum diameter of the nucleus, the cell is classified as a differentiated squamous cancer cell.") Although it seems to me that the cytometric qualification might be a little difficult to apply for routine examinations, I believe that some line has to be drawn. I wonder if one should apply this cytometric qualification very strictly for each cell or if one should group cells which come in dense or loose clusters according to the average cell type. To illustrate my point, I submit photomicrograph Fig. 1 which shows, in my opinion, parabasal cell dyskaryosis since most of the cells exhibit abnormal nuclei but are contained in cells which show still a relatively large margin of cytoplasm. The cells in Fig. 2 could all be classified as "cancer cells." However, if one applies the cytometric qualification of Ruth Graham strictly, one will have to classify some of the cells in this loose cluster of Fig. 1 as exhibiting "dyskaryosis" and some of the cells as differentiated squamous cancer cells.

The second point I would like to raise is the criteria of dyskaryosis for a relatively large cell, or a larger than normal cell. In the photomicrograph Fig. 3 there is a large cell in the center which would qualify according to the definition of Ruth Graham as exhibiting "dyskaryosis." The maximum nuclear diameter is smaller than the distance from the border of the cell. Also, the cell contains a definitely abnormal nucleus with abnormal distribution and increase in chromatin as is stipulated. Is this cell a superficial dyskaryotic cell only? I wonder if Drs. Papanicolaou and Graham, and possibly also the other members of the "Dyskaryosis" symposium would care to comment on these questions:

1. Do the cells in photomicrograph Fig. 1 exhibit parabasal cell dyskaryosis or are they differentiated squamous cancer cells? Should the cells of Fig. 2 be classified as differentiated squamous cancer cells?

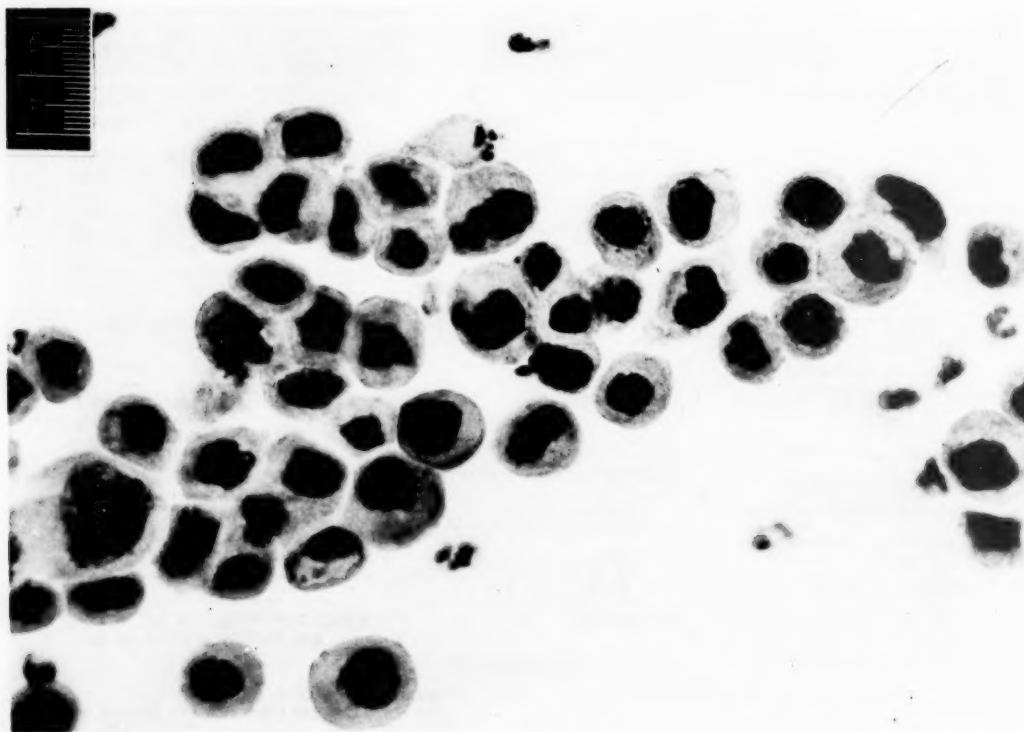


Fig. 1

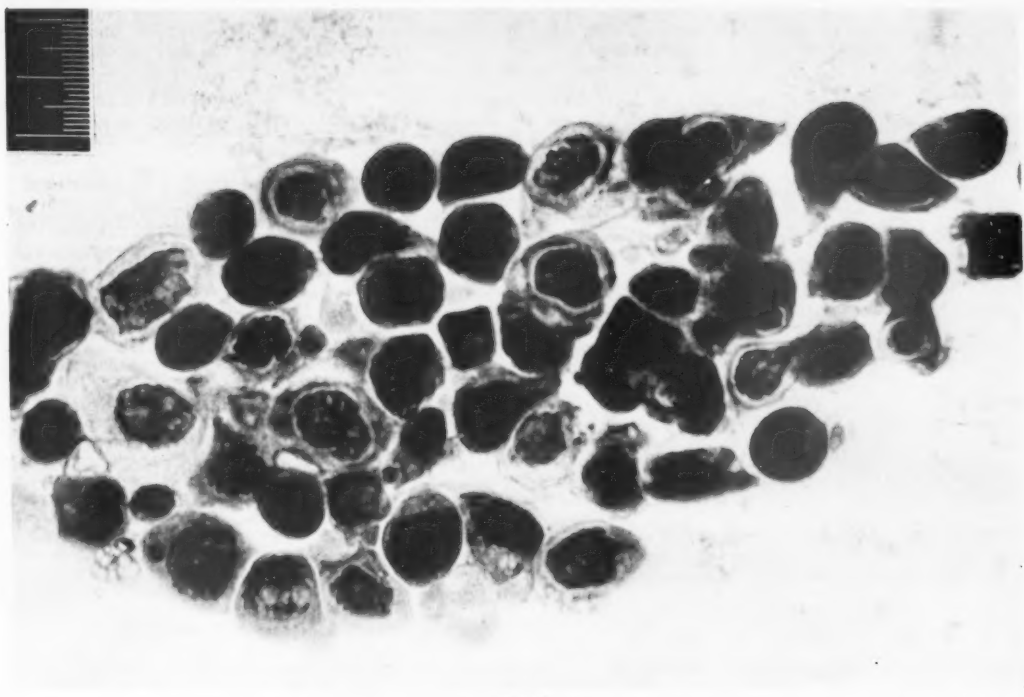


Fig. 2

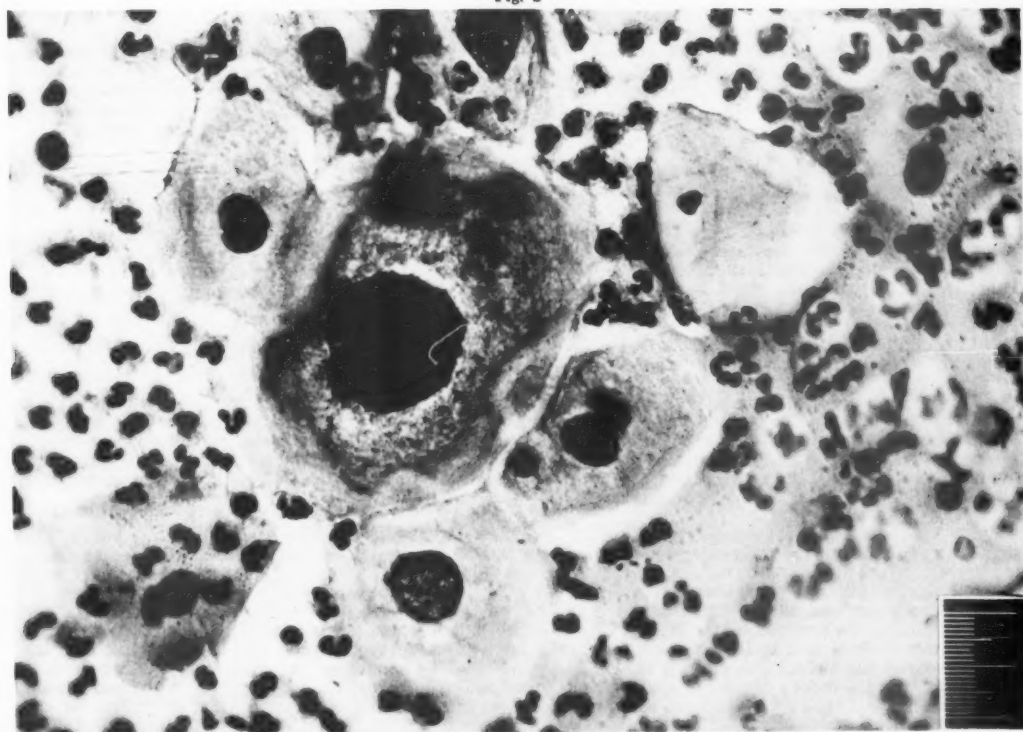


Fig. 3

2. If cells exhibiting dyskaryosis come in dense or loose clusters with some other cells which contain larger nuclei and less cytoplasm than usually observed in cells showing dyskaryosis, should one describe the cluster according to the average cell type or not? (Example: Should one call the depicted loose cluster in Fig. 1 as containing mainly cells exhibiting parabasal cell dyskaryosis or should one identify the cells as "some show dyskaryosis and others are differentiated squamous cancer cells"?)

3. Does the cell in photomicrograph of Fig. 3 exhibit superficial cell dyskaryosis or is it a giant cancer cell?

4. Is superficial cell dyskaryosis restricted to the cells which can be identified as superficial cells and are of the same size as normal superficial cells or does it describe also cells which are considerably larger than superficial cells but maintain still a nuclear-cytoplasmic ratio of the cell exhibiting dyskaryosis?

Alberto Bosch 10
Madrid, Spain

JOSE R. DE SOL, M. D.

(The replies received to the above questions
will be published in the next edition - Ed.)

DO CELLULAR CHANGES OCCUR AS A RESULT OF AIR DRYING OF SMEARS?

TO THE EDITOR:

Reference is made to the Symposium on Various Methods of Fixation of Smears which appeared in ACTA CYTOLOGICA, Vol. 1, No. 1, 1957, especially to the discussion on pages 62-66.

For many years, for our own personal convenience, the material for cytologic study was not always fixed wet on the day it was collected but on the following day. Sometimes it is easier for carrying slides any distance to put them in special cardboard boxes rather than in jars containing liquid fixative. It seemed to us that there would be no artifacts sufficient to falsify the results, especially with reference to the diagnosis of atypia.

Some months ago, I had the opportunity of expressing my opinion on this matter; answering a question in ACTA CYTOLOGICA, I made the following statement:

"Lichwitz and co-workers in 1949 stated that air drying is an adequate fixative method that does not change the cellular lipoprotein complex. Cellular oxidation, however, does not permit staining by Papanicolaou's technique, as in this, reducing substances are used before staining. Lencioni and co-workers observed also that in air dried smears the cells do not show changes in the morphology or staining affinities for many days. Sagi and Mac Kenzie allowed the smears to dry after fixation in acetone and slides similar to those fixed immediately in alcohol-ether were obtained.

"Changes from customary techniques are usually made for convenience. For many years, therefore, because of the inconvenience of conveying many receptacles with slides in alcohol-ether from my private office to the laboratory, I have carried the unfixed slides in little boxes, and the smears were fixed in alcohol-ether in the laboratory some time the next day. I have studied smears from the same patient, fixing one immediately, and allowing another to dry before fixing. I have not found artifacts that would invalidate the process of air drying. Sometimes the cells appear more acidophilic, but there is no modification in their morphology and cancer diagnosis is not interfered with at all. I should like to point out that we use the Trichrome stain of Shorr. Daily, I have the opportunity of comparing the two methods mentioned, as all smears of hospital patients are fixed immediately without drying, but the smears from my private patients and from those of some of my colleagues are fixed after air drying, and I find no significant differences, especially with reference to cancer diagnosis." (ACTA CYTOLOGICA, Vol. 1, No. 1, p. 63)

Benedek and Rubenstein also, according to their careful and detailed book on "Woman's Sexual Cycle," gave up the wet smear technique of Papanicolaou "for practical reasons" (because the smears were sent from different places by the patients themselves). They tell us that "air dried smears can be examined as effectively as the ones examined with the moist technique," although they accept Papanicolaou's technique as "ideal." "Any technique modification is permitted as long as cellular integrity and cytological details are preserved, stipulating also that the evaluation of the smears is more often based on cellular morphology than on accidental stain combinations that definitely constitute a trick."

The smears, according to the technique of these authors, were fixed for 30 minutes while still wet and afterwards air dried and kept in boxes to be sent to the laboratory. Comparing this process with the original wet one, they found that the sole difference was that the dried ones had a greater affinity for eosin.

As to the discussion on our statement by world famed cytologists, there were many views contrary to ours, among them that of Pundel. Pundel argues that air drying, besides increasing eosinophilia, alters the cellular morphological details, thus not permitting a correct cancer diagnosis. Only Ferin, basing his statement also on personal researches, agreed that "in air dried smears the nuclear structure is well preserved."

This scientific discussion stimulated us to undertake a systematic study in order to substantiate our opinion. Thirty cases, therefore, were selected from the Preventivo de Cancer, and from each one slides were collected from the same area on the cervix; one was immediately fixed in alcohol-ether, the second one was fixed after 1 hour of air drying, a third was fixed 24 hours after air drying. From some patients a fourth slide was prepared and fixed while still wet; it was removed after 30 minutes, air dried, and stained 24 hours later, after re-fixation. All slides were then stained by Shorr's technique.

Among the 30 cases, 9 had cancer; in all cases the same cytological reading was given to the 3 (or 4) slides taken. One of the cases, an invasive cancer, was given a Class III reading due to the presence of excess blood in the smear interfering with correct diagnosis, but this difficulty was encountered in all the slides from this case.

The results of our observations are as follows:

(1) Eosinophilia is always, or at least frequently, increased in air dried material, according to the air drying time: the degree of eosinophilia ranged from 30% in the first slide (no air drying) to 70% in the second one (1 hour), and then fell to 45% (24 hours). Many showed an increase in eosinophilia from 5 to 10% to 80 or 90%, returning in the third slide to a lower percentage, but rarely to that of the first slide. This eosinophilia, however, in a great number of smears is not what we call "true" eosinophilia; it is a "pseudo-eosinophilia" because it covers the whole cell with a reddish tint, including the nucleus, and because it is less stained around the cell borders. All cells, superficial and deep, become stained in this way, a phenomenon that does not occur with true eosinophilia. It is a kind of eosinophilia that may be distinguished in nearly all cases as artificial, frequently seen in vaginitis, even if the material is fixed while still wet.

For those who give a hormonal reading of the smears by the eosinophilic index, the air drying technique cannot be used. We are accustomed to considering morphology and giving a hormonal reading, using the Shorr stain or some other method, such as using fresh specimens, either unstained or stained by toluidin blue. That is why, even for hormonal evaluation, the fixation artifacts of air drying do not disturb us. With a high magnification the truly pyknotic nuclei are perfectly distinguishable from the others.

(2) For the diagnosis of atypia, which of late has interested us more than hormonal evaluation, all slides were alike from the morphologic aspect. On slide B (fixed after 1 hour of drying) it was common for chromatin to become diffuse and less clear, but on slide C (fixed after 24-hour drying) and on D (immediately fixed, dried, and stained 24 hours later) the chromatin stained clearly again, as in smears fixed without air drying. Dyskaryosis, malignant cells, and trichomonas were always found and diagnosed with equal ease in all slides from the same case, no mistake having been found in the results on account of the fixation method.

From this study we therefore conclude that:

(1) Fixation of material for cytologic study while still wet is ideal because it enables one to compare the eosinophilic indices with the standards found by the authors who use this method. Also, it preserves nuclear detail, permitting one to observe the chromatin clearly.

(2) When, for various practical reasons, the material is not fixed while wet, it should be left drying in air for 24 hours, then fixed in alcohol-ether and stained. There is a little increase of eosinophilia, but cellular morphology, the nuclear chromatin picture and its staining affinities do not alter, thus permitting a correct diagnosis of atypical and malignant cells.

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Emilio Berla 46, 3 - Copacabana
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and

YOUHANNA SABBAG, M.D.
Postgraduate student in the
Department of Cytology

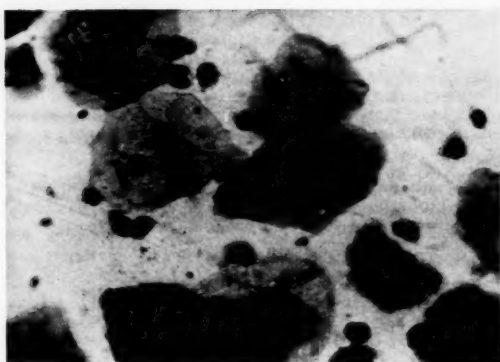


Fig. 1. Normal case. Slide A: immediately fixed in alcohol-ether.

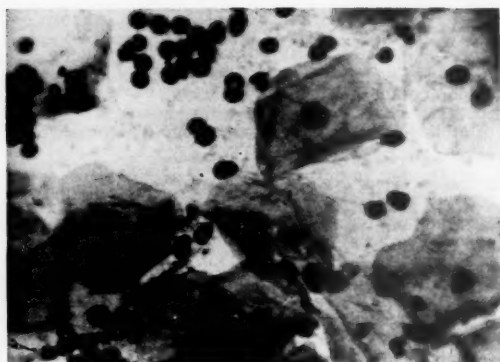


Fig. 4. Malignant case. Slide A: immediately fixed in alcohol-ether.

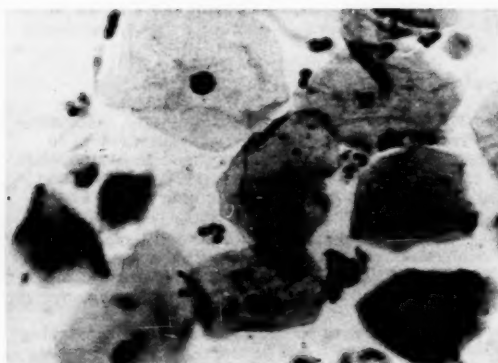


Fig. 2. Normal case. Slide B: fixed 1 hour after air drying.

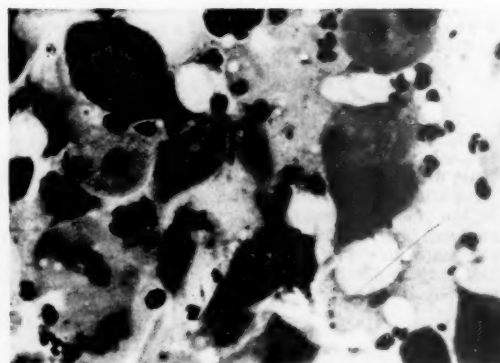


Fig. 5. Malignant case. Slide B: fixed 1 hour after air drying.

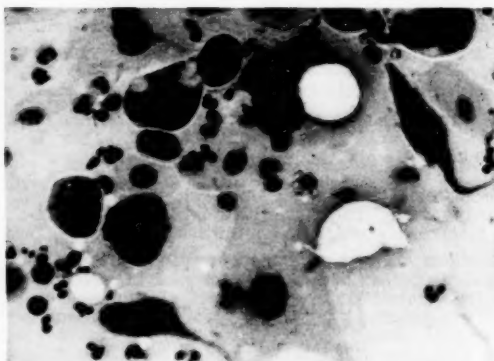


Fig. 3. Normal case. Slide C: fixed 24 hours after air drying.

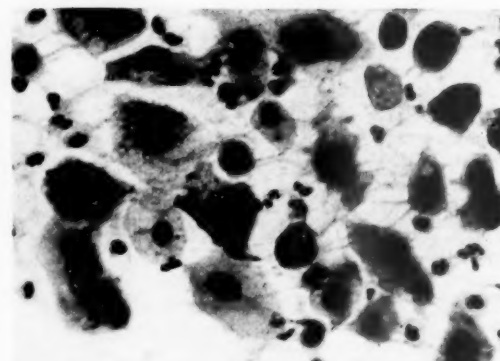


Fig. 6. Malignant case. Slide C: fixed 24 hours after air drying.

DYSKARYOTIC CELLS UNDER THE COLPOMICROSCOPE

TO THE EDITOR:

-Reference is made to the paper by T. Antoine and co-workers in ACTA CYTOLOGICA Vol. 1, No. 1, 1957, page No. 35.

Colpomicroscopy represents a technique which is actually related to both histology and cytology since the colpomicroscopist observes the surface epithelial cells of the uterine cervix in situ. Therefore, he observes the individual cells like the cytologist, but sees them in the tissue like a histologist. The cytological diagnosis is based on changes in the cytoplasm and the nucleus of exfoliated cells, whereas, the colpomicroscopic diagnosis is made from these cellular changes as demonstrated on the outer epithelial surface and from their relationship to the surrounding normal epithelium, i. e. the border of the atypia to the normal tissue. Hence, the colpomicroscopic diagnosis is not founded solely on individual cell changes but rather on the appearance of the surface of the epithelium as a whole. Since only the very upper cellular layer of the epithelium is visible, we have to make ourselves familiar with making a diagnosis from cellular changes of the extreme upper cellular layer. This method is, in fact, a cytological diagnosis in situ. It is not always possible, however, to definitely differentiate the "dyskaryotic cells" from the "atypical cells." This distinction is not essential for the colpomicroscopic diagnosis since it is based on the observation of a large area of the epithelium rather than on the individual cell.

According to Wied (Am. J. Obst. & Gyn. 71:793-805, 1956) cytological smears from a dysplasia contain some "dyskaryotic cells" but no "abnormal cells" (malignant cells), cytological smears from a carcinoma in situ also contain a considerable number of "dyskaryotic cells" in addition to the "abnormal cells" (e. g. 100:40), whereas the cytological smears in invasive carcinoma contain relatively few "dyskaryotic cells" as compared with the "abnormal cells" (e. g. 100:200).

We have studied our colpomicroscopic material in order to investigate these above statements. These are the findings:

- (1) Occurrence of dyskaryotic cells in dysplasia: under the colpomicroscope one finds very many dyskaryotic cells on the epithelial surface. The dyskaryotic cells are colpomicroscopically evident by their hyperchromasia, as shown in Figure No. 1. The figure shows the regeneration zone on the border of an ectropion. The predominant cell types present are those of the parabasal and of the deeper intermediate layers.
- (2) Occurrence of dyskaryotic cells in carcinoma in situ: on the epithelial surface of a carcinoma in situ the following colpomicroscopic observation is made very often; at the border of the carcinoma in situ and the normal epithelium there is usually an area consisting of cells with very dark, rather small, sometimes even pyknotic nuclei which, in my opinion, are compatible with the superficial cell dyskaryosis (see Figure 2). These apparently dyskaryotic cells disappear towards the center of the lesion, at least they cannot be differentiated colpomicroscopically from "abnormal cells" (cancer cells).
- (3) Occurrence of dyskaryotic cells in invasive cervical carcinoma: here one will find also some "dyskaryotic cells" at the very border of the lesion and the normal epithelium; however, fewer "dyskaryotic cells" are found as compared with the carcinoma in situ (see Figure 3).

Summarizing, one may state that "dyskaryotic cells" may be visualized colpomicroscopically in lesions which are histologically dysplasias. The cells found colpomicroscopically are comparable with cells exfoliated from the parabasal and deep intermediate cell layers. Colpomicroscopically, "dyskaryotic cells" are found on the surface of invasive and non-invasive lesions, at the border of the lesion and the normal epithelium.

In carcinomas in situ these dyskaryotic cells seem to be present primarily in the border zone of the lesion and in relatively more increased numbers than in invasive lesions. This observation corresponds favorably with the cytological observation of Wied. The most interesting observation to me was that the "dyskaryotic cells" were found in increased numbers on the very border of the normal epithelium. This may lead to the assumption that "dyskaryotic cells" are usually found in association with malignant lesions but are not "cancer cells" per se.

May I say that the three photomicrographs were prepared with a colpomicroscope from the living tissue in situ.

Co-Chairman (Oberarzt),
Department of Obstetrics and Gynecology
County Hospital (Kreiskrankenhaus)
Heidenheim, Brenz, Germany

WOLFGANG WALZ, M.D.

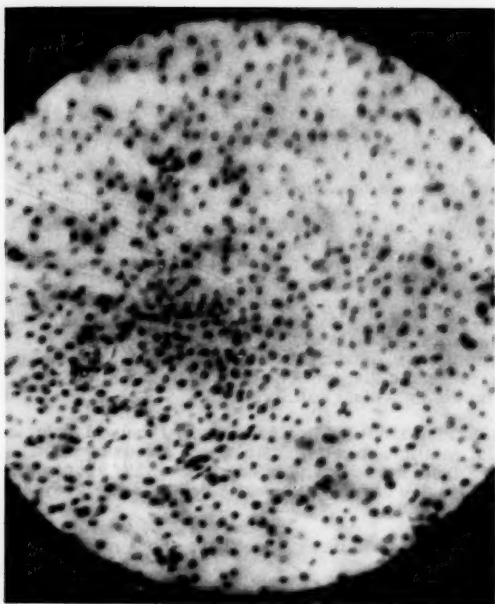


Fig. 1. Zone of epithelial regeneration on the border of an ectropion as seen in the colposcope. The cervix uteri has been stained with Toluidin Blue. Magnification: 180 x.

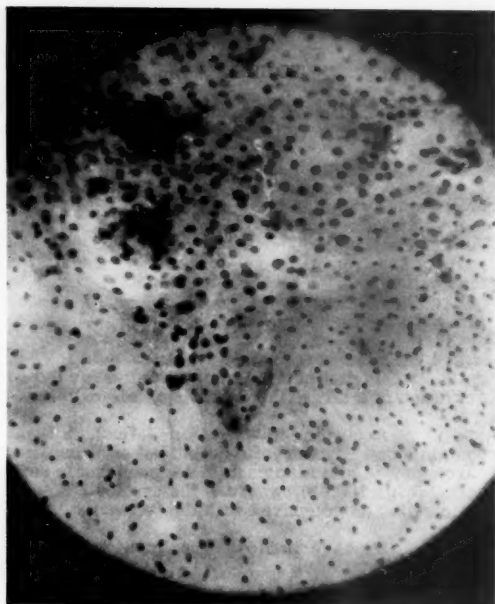


Fig. 2. Border zone of the normal epithelium and carcinoma in situ as seen in the colposcope. The cervix has been stained with Toluidin Blue. Magnification: 180 x.

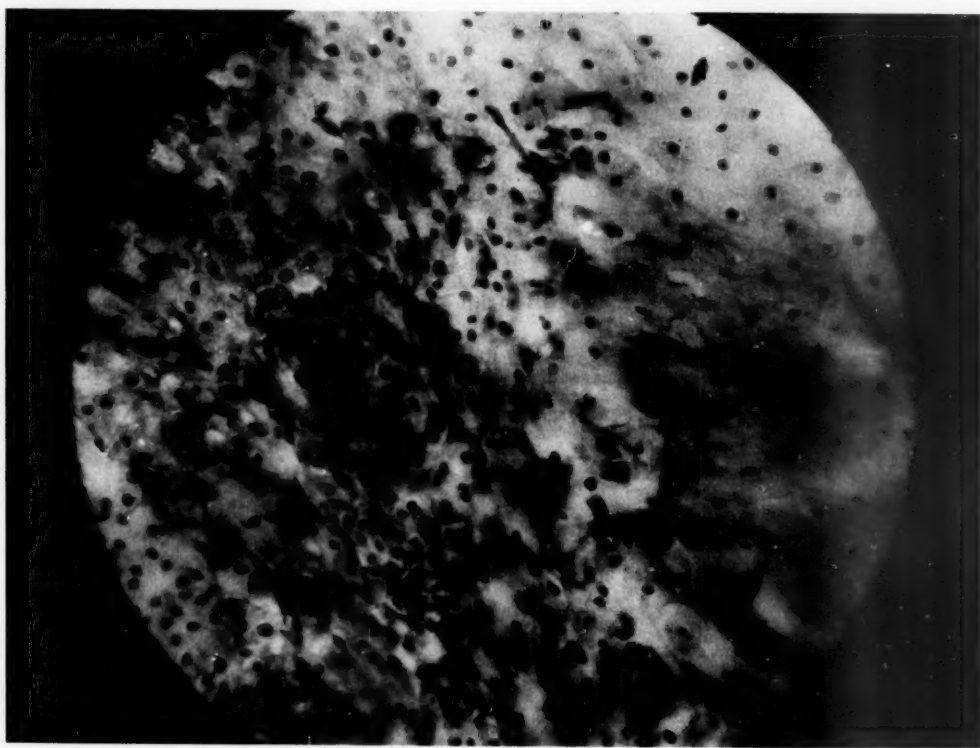


Fig. 3. Border zone of the normal epithelium and invasive squamous carcinoma as seen in the colposcope. The uterine cervix has been stained with Toluidin Blue. Magnification: 180 x.

DISKARYOTIC CELLS IN EXPERIMENTALLY PRODUCED CARCINOMA
OF THE UTERINE CERVIX

TO THE EDITOR:

Dyskaryotic cells were constantly encountered in vaginal smears of animals during the development of experimental carcinoma of the cervix. The cells made their appearance usually one month after insertion of the methylcholanthrene-impregnated string and the number fluctuated considerably during the first three months (1, 2). During the stage when the animal was in estrus they decreased markedly in number or even completely disappeared, while the number of dyskaryotic cells was appreciably increased during the anestrus phase. All the types of dyskaryosis described for the human were observed in the experimental animals. Basal cell dyskaryosis was particularly prominent during the low estrus phase of normal estrous cycle in the mouse, while superficial cell dyskaryosis appeared later in the experiment during the estrous phase. Sometimes up to 80 per cent of the cells showed some degree of cellular atypism. We have never observed a single cancer in which dyskaryosis did not precede the appearance of malignant cells by several weeks or months.

The dyskaryotic cells showed much greater variety of cytoplasmic and nuclear changes than those commonly observed in man. Cytoplasmic changes were particularly prominent and included a complete reversal of the staining behavior, the appearance of large vacuoles (Fig. 1) and keratohyaline granules in the cytoplasm, and the occurrence of grotesquely shaped giant epithelial cells. The nuclei sometimes did not participate in this cellular atypism but remained small and pyknotic. More often, however, they became anywhere from 5 to 10 times larger in size than the nuclei of normal cells of the same degree of differentiation and often two nuclei were present (Fig. 3). The chromatin structure of the nuclei was always rather finely knitted, which served as an important characteristic to differentiate them from malignant nuclei with coarse clumping of the chromatin (Fig. 2). Nucleoli were usually small or indistinguishable.

Many of the dyskaryotic cells also showed severe degenerative changes such as karyolysis and karyorrhexis with extrusion of chromatin into the cytoplasm (Fig. 4). Occasionally dyskaryotic cells showed the phenomenon of cannibalism, and leukocytes as well as other foreign material were found in the cytoplasm.

The ratio of cytoplasm to nucleus was always large, although somewhat smaller than in the corresponding normal cells, and large nuclei were always found surrounded by larger amounts of cytoplasm. A significant change in this cytoplasmic-nuclear ratio was the best indication of a malignant transformation of these cells. A second reliable sign was the marked enrichment of chromatin material with appearance of the previously mentioned coarse chromatin pattern.

In our experiments in which the administration of carcinogen was interrupted at various intervals dyskaryotic cells remained present in the vaginal smear for several weeks and slowly disappeared in those animals in which no tumor developed. It is notable that 50 per cent of the animals which showed appreciable dyskaryosis, but no malignant cells at the time the carcinogen was discontinued, continued to develop malignant tumors. If this is due to a fundamental change in the metabolism of the dyskaryotic cells, as suggested by Boschann (3), or due to some remaining carcinogen fixed in the animal tissues, cannot be stated at the present time.

The cytochemical investigations on dyskaryotic cells showed that the DNA in the cytoplasm was usually increased as demonstrated by the Feulgen reaction, while it was not present in increased amounts in the nucleolus. Investigations on the RNA content showed no remarkable differences. The cytoplasm of the dyskaryotic cells also contained more phosphatase and phosphamidase.

In tissue sections the presence of dyskaryotic cells could be observed as early as 4 weeks after initiation of the experiment. During this stage superficial cell dyskaryosis usually was predominant with numerous degenerative changes found in the superficial layers of squamous cell epithelium. Basal cell dyskaryosis followed later and was only for a comparatively short time ahead of the changes characterized as carcinoma in situ. In invasive carcinomas dyskaryosis was visible on the margins of the tumor growth and often extended over the entire vagina. It was never present in the center of the tumor, which was composed solely of cancer cells.

From our experiments we believe that dyskaryosis represents morphological evidence of a specific type of cell injury or altered cellular metabolism without evidence of the great proliferative power inherent in cancer cells. Experiments are now underway to define more properly the significance of these changes in the process of malignant transformation.

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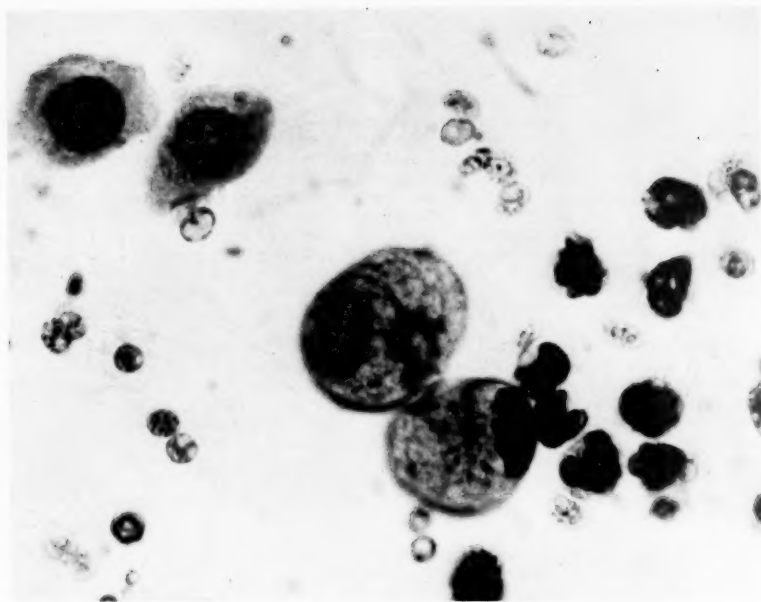


Fig. 1. Dyskeratosis observed in basal and parabasal cells 9 weeks after administration of the carcinogen. Note the vacuoles in cytoplasm.

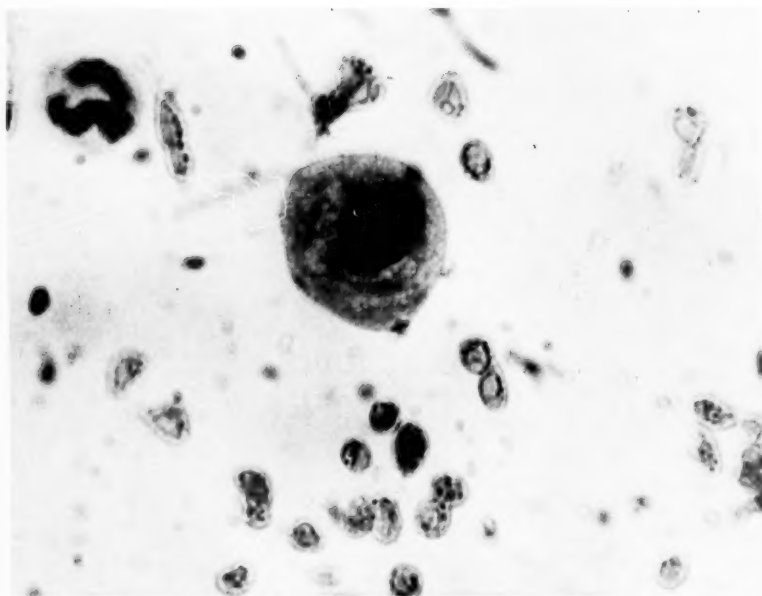


Fig. 2. Intermediate cell dyskeratosis showing cytoplasmic-nuclear ratio of benign cells and fine chromatin network in enlarged nucleus.

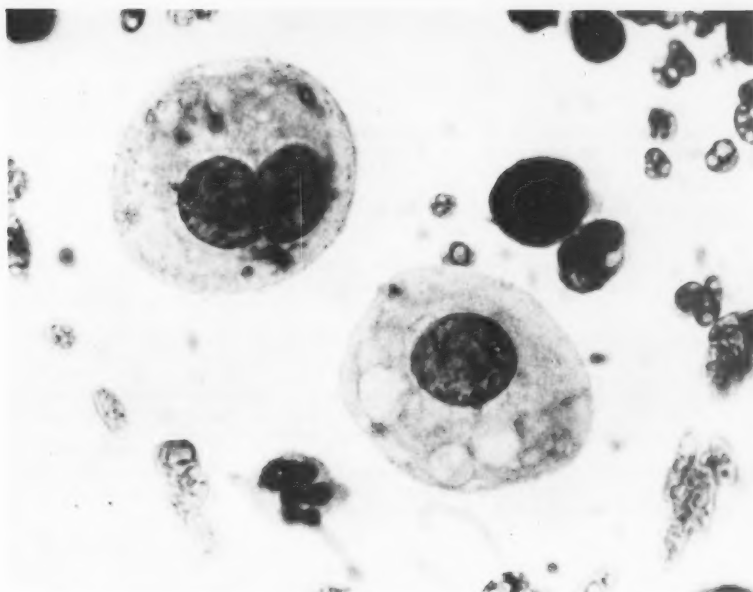


Fig. 3. Superficial cell dyskaryosis with 2-nucleated cell and changes in nuclei and cytoplasm.

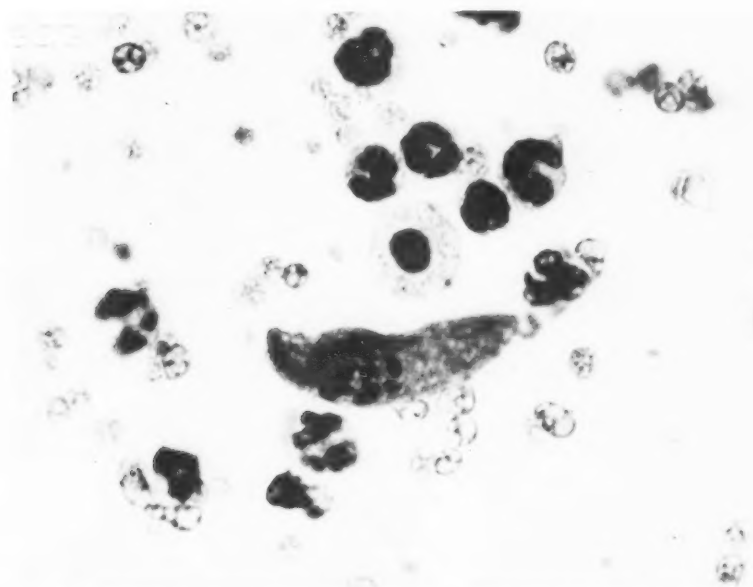


Fig. 4. Dyskaryotic squamous cell with evidence of karyorrhexis 5 weeks after administration of the carcinogen.

ACTA CYTOLOGICA

TO THE EDITOR:

---I feel sure that the journal will prove to be invaluable to all workers in the cytological field, and I would like to congratulate you on the excellence of the current number. ---

J. BAMFORTH, M.D., F.R.C.P.

Imperial Cancer Research Fund
Clinicopathological Laboratories
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London, W. C. 2, England

TO THE EDITOR:

---The idea of written symposia seems quite unusual (at least in this part of the world) but very useful. They will serve to keep me up to date without a struggle through the World Literature and also help me to maintain a proper critical balance between the views expressed.

Of the prospective symposia the two that excite my immediate interests most are: that on terminology and that on forms for laboratory reports, since they raise the practical issues of a routine laboratory and are fundamental to "field work" in the sort of cytology I pursue. ---

Dr. F. A. LANGLEY

Histo-Pathologist
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for Women and Children
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England

TO THE EDITOR:

---The first edition of ACTA CYTOLOGICA was received today. ---

---I think this is a magnificent achievement because it is exactly the kind of periodical for which there has been a great need for many, many years. It is a great contribution to the science of Cytology and should do more than anything else I can think of in furthering its growth and development.---

PAUL F. FLETCHER, M.D.

Secretary-Treasurer
INTER-SOCIETY CYTOLOGY COUNCIL
634 N. Grand Blvd.
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TO THE EDITOR:

---Die Vorteile der ACTA CYTOLOGICA sind schon nach flüchtigem Lesen klar ersichtlich. Es nimmt nicht nur einer Stellung sondern mehrere, wobei die Diskussionsschreiber in der Lage waren, vor der Veröffentlichung das zu lesen, was der Referent zu sagen hatte. Es ergibt sich dadurch ein sehr objektives Bild zu den einzelnen Themen. ---

---Vielleicht wird man Ihre Zeitschrift imitieren, was zumindest in Europa, wenn es auf anderen Gebieten geschähe, bestimmt ein Vorteil wäre. ---

Dr. JOACHIM UFER

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(Translation from the German:

---The advantages of ACTA CYTOLOGICA are immediately apparent, not only one expert presents his viewpoints, but several, and the discussants are given the opportunity to read prior to their remarks on the content of the paper presented by the main speaker. In this way we obtain a very objective evaluation of each individual topic. ---

---It is quite possible that your journal will serve as a model for what would be - in Europe - a great advantage in other fields of medicine. ---)

TO THE EDITOR:

---May I congratulate you. It is a very good idea to keep together the people who are interested in cytology by a journal which is so well done. I was quite surprised to find that the ACTA CYTOLOGICA is a special kind of medical journal. It keeps the cytologists together, not only by stimulating scientific interest, but also by creating a certain familiar feeling between them.

Keeping the pages open for vivid discussion as you do with the symposia is a valuable new addition in the field of medical journals. The size and the print of the ACTA CYTOLOGICA are also very comfortable. It is amazing how clear the pictures are. ---

The symposium on androgenic effects interests me very much. I am working with a colleague who does endocrinology. We are interested in these androgenic-genital syndromes, which are, cytologically very difficult. However, as I read the ACTA CYTOLOGICA I find that more experienced people than we also have difficulties with this subject. ---

Universitäts-Frauenklinik
Göttingen, Germany

DR. HORST NAUJOKS

TO THE EDITOR:

---Ich finde das Heft nach Inhalt und Ausführung ausgezeichnet und glaube sicher, dass es wirklich eine Lücke ausfüllt, indem es dieses besonders interessante und zu einer selbständigen Abteilung gelangte Teilgebiet unseres Faches nicht nur unterstreicht, sondern die hier geleistete wissenschaftliche Arbeit jeweils auf den neuesten Stand publiziert und zusammenfasst. Die Gynäkologie kann sich zur anrechnen, auf dem Gebiet der Carcinomforschung, insbesondere der Diagnostik, eine der bahnbrechenden Disziplinen gewesen zu sein und es ruft schon ein Gefühl der Befriedigung hervor, sehen zu dürfen, dass die Aktualität auf diesen Gebiet nicht erlahmt ist. ---Ich gratuliere Ihnen herzlich zu der Herausgabe---

Direktor, Universitäts-Frauenklinik
der Charité Berlin
Tucholsky Strasse 2
Berlin NW, Germany

PROFESSOR DR. HELMUT KRAATZ

(Translation from the German:

---I found the ACTA CYTOLOGICA excellent as far as content and appearance were concerned. I am sure that it really fills a need, not only by emphasizing this especially interesting field in our medical specialty, which practically becomes a specialty in itself, but also by publishing and summarizing the scientific work and knowledge that has been and is being done in this specialty. Gynecology can count it as an honor that it was one of the disciplines which has opened up new areas of cancer research, especially in the field of cancer diagnosis. It gives one a feeling of satisfaction to be able to see that the interest in this field has not decreased. --- I congratulate you cordially for this publication. ---)

TO THE EDITOR:

---ACTA CYTOLOGICA is beautifully arranged and the material is excellent. I think it will fill a need in the field of cytology which has been felt for a long time. ---

Director, Department of
Pathology
Medical Research Institute
Michael Reese Hospital
Chicago, Illinois, U. S. A.

OTTO SAPHIR, M. D.

TO THE EDITOR:

---The ACTA CYTOLOGICA fulfills a long need and will coordinate the thinking and viewpoints of gynecologic cytologists. This is a splendid publication. ---

---I was greatly interested in the discussion in the ACTA CYTOLOGICA on colpomicroscopy. I am familiar with the technique of colpomicroscopy. We have used one here since last June as a research project. I think that colpomicroscopy holds great promise as a tool for cervical cellular research. ---

---May I suggest as a future minor topic for the ACTA "oddities and foreign bodies" found in cytologic smears! A recent smear showed "plant material;" at first I thought it was pollen, but the material is still not yet identified. One could say that airborne plant material could fall on a slide before spreading, but if so, I would think that such material would "fall off" when immersed in fixative. It is possible, of course, that such material could be trapped by secretions at the time the smear is spread. Anyway, it's interesting, and I venture to say that many other types of foreign bodies have been observed on gynecol. smears. A collection of such findings would provide an entertaining reading! ---

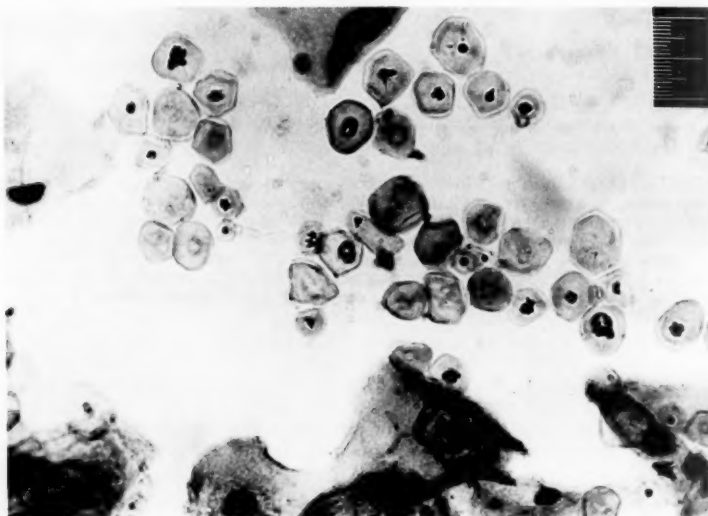
DR. JOHN F. SHEEHAN

Research Associate Professor Clinical Cytology
The Creighton University
25th and California Streets
Omaha 31, Nebraska, U. S. A.

CRYSTALS IN SMEARS

TO THE EDITOR:

In a small number of smears from the female genital tract I have observed crystals which are highly refractory to light. They have been present even when lubricants have not been used, and when vaginal examination has not been performed prior to making the smear. The crystals in question are shown in the enclosed photomicrograph.



Would you be kind enough to publish this photograph, and enquire of the members of ACTA CYTOLOGICA if they have seen similar crystals and have made any observations that might help to identify them.

M. JUNE SCUDAMORE, M. R. C. O. G.

University College Obstetric Hospital
Huntley Street
London W. C. 1.
England.

EDITORIAL

Uniformity in cytological terminology is one of the proposed goals of the International Academy of Gynecological Cytology. It is essential to obtain general agreement on the basic cytological nomenclature so that scientific findings can be compared and that discussions within symposia and meetings will be possible.

The major portion of the present edition of ACTA CYTOLOGICA contains an opinion poll (held by correspondence) on cytological terminology. The present discussions are only preliminary to a series of discussions on cytological terminology, and are by no means published with the intent to present a final, definitive terminology. On the contrary, the present discussions are to serve only as a basis for further discussions and to stimulate basic cellular research in those areas where a deficiency in our technical knowledge has become apparent.

This first attempt to obtain an understanding in terms shows, unfortunately, that there exist some basic incongruities among opinions on various questions. It is the purpose of this presentation to point up the existing differences rather than to settle the disputes.

In this edition only the non-malignant cytological terminology is discussed. Each of the members of the Terminology Sub-Committee of the International Academy (Drs. Ayre, Berger, Cuyler, Graham, Papanicolaou, Pundel, Rakoff, Reagan, Stoll, Terzano, Wied and Zinser) received (1) 24 photomicrographs upon which they were requested to apply their own terminology and any additional comments, and (2) a questionnaire on definitions of commonly used cytological terms.

The answers received from the Members of the Terminology Sub-Committee were then mimeographed and submitted, with the name of the committee member coded, to the Members of the International Academy and to several of its Candidate Members. These latter groups were asked to indicate their preferential votes on the suggested terminologies. A "lower preference" vote expressed the terminology least preferred. The ballots received in the Editorial Office were compiled and evaluated after which a brief presentation of the results and generalized conclusions were given where possible. The individual ballots of this opinion poll are available for inspection in the Editorial Office.

Several participants in the opinion poll submitted their own terminologies when they did not agree with any of those presented by the Members of the Terminology Sub-Committee. These individual terminologies will be found after the terminologies or definitions of the Terminology Sub-Committee. Further discussion by our readers of any of the problem areas of cytological terminologies are invited. Worthwhile contributions will be included in the column "Letters to the Editor" in the coming editions.

Another section of the present edition contains a discussion by 22 clinicians regarding what they expect the cytological laboratory to contribute to the diagnostic evaluation of the gynecological and obstetrical patient. At the end of this discussion a cytological report form has been compiled from the suggestions of the 22 clinicians which is meant also to serve for further discussions among our readers.

G. L. W.

OPINION POLL ON CYTOLOGICAL DEFINITIONS

INTRODUCTION

In an attempt to clarify what is understood by commonly used cytological terms, the Members of the Terminology Sub-Committee of the International Academy of Gynecological Cytology have been asked to give their definitions and opinions on the following eleven topics:

1. Is the term "Cornified Cell" scientifically correct as applied to exfoliated cells from the vagina and uterine cervix?
2. Is the term "Acidophilia" or "Acidophilic" scientifically correct as applied to exfoliated cells fixed and stained according to the Papanicolaou method?
3. Is the term "Hyperchromatosis" scientifically correct?
4. Definition of "Karyopyknosis."
5. Definition of a "Basal Cell."
6. Definitions of an "Atrophic Parabasal Cell" and an "Hypertrophic Parabasal Cell."
7. Definition of an "Intermediate Cell."
8. Definition of a "Superficial Cell."
9. Definitions of "Cytolysis" and "Autolysis."
10. Definition of a "Keratinized Cell."
11. Terminology and definitions of the "Main Cyto-hormonal Patterns."

The following Members of the Terminology Sub-Committee have contributed and submitted their terminology and definitions:

J. Ernest Ayre, Miami, Florida, U.S.A.
 Jean Berger, Basel, Switzerland.
 Ruth M. Graham, Buffalo, New York, U.S.A.
 George N. Papanicolaou, New York, New York, U.S.A.
 J. Paul Pundel, Luxembourg, Luxembourg.
 Abraham E. Rakoff, Philadelphia, Pennsylvania, U.S.A.
 James W. Reagan, Cleveland, Ohio, U.S.A.
 Peter Stoll, Heidelberg, Germany.
 Guillermo Terzano, Buenos Aires, Argentina.
 George L. Wied, Chicago, Illinois, U.S.A.
 Hans Klaus Zinser, Cologne, Germany.

The names of these contributors were coded and the definitions submitted to the Members of the International Academy of Gynecological Cytology and several of its Candidates for Membership for an opinion poll of their preferences of the definitions, shown by "first preference" and lesser preference votes. The following ballot has been submitted to the Members and Candidates:

BALLOT ON CYTOLOGICAL DEFINITIONS												
	Code No. 1	Code No. 2	Code No. 3	Code No. 4	Code No. 5	Code No. 6	Code No. 7	Code No. 8	Code No. 9	Code No. 10	Code No. 11	I do not agree with any of the proposed definitions & add my own one.
Definition No. I												
Definition No. II												
Definition No. III												
Definition No. IV												
Definition No. V												
Definition No. VI												
Definition No. VII												
Definition No. VIII												
Definition No. IX												
Definition No. X												
Definition No. XI												

To indicate your terminology of choice, place a "1" in the proper box. In case more than one code uses the same or a similar definition, place "1" in all such boxes, if you wish (do not use "yes," "no" or "X"). You may also write in the numbers "2" to "11" in order to show your preference of other terminologies. If you do not agree with any of the proposed definitions, indicate this in the space provided and add your own definition on a separate sheet.

The following individuals have voted in the opinion poll:

1. Anthony F. Anderson, Edinburgh, Scotland, U. K.
2. J. Ernest Ayre, Miami, Florida, U. S. A.
3. Jean Berger, Basel, Switzerland.
4. Hanns-Werner Boschann, West-Berlin, Germany.
5. Jean de Brux, Paris, France.
6. Jacques Ferin, Louvain, Belgium.
7. Clarice do Amaral Ferreira, Rio de Janeiro, Brazil.
8. Herbert K. Fidler, Vancouver, British Columbia, Canada.
9. Alvan G. Foraker, Jacksonville, Florida, U. S. A.
10. Manuel Galbis, Valencia, Spain.
11. Marcel Gaudetroy, Lille, Nord, France.
12. Ruth M. Graham, Buffalo, New York, U. S. A.
13. Emmerich von Haam, Columbus, Ohio, U. S. A.
14. Pierre Haour, Lyon, Rhone, France.
15. F. A. Iklé, St. Gallen, Switzerland.
16. Olle Kjellgren, Goteborg, Sweden.
17. Julieta Calderon de Laguna, Mexico, D. F., Mexico.
18. Olaf Messelt, Oslo, Norway.
19. Luis Montalvo Ruiz, Madrid, Spain.
20. Junji Mizuno, Nagoya, Japan.
21. Violette M. Nuovo, Paris, France.
22. George N. Papanicolaou, New York, New York, U. S. A.
23. J. Paul Pundel, Luxembourg, Luxembourg.
24. Abraham E. Rakoff, Philadelphia, Pennsylvania, U. S. A.
25. James W. Reagan, Cleveland, Ohio, U. S. A.
26. Edmund Schüller, Vienna, Austria.
27. Horst Smolka, Kiel, Germany.
28. Peter Stoll, Heidelberg, Germany.
29. Guillermo Terzano, Buenos Aires, Argentina.
30. Erica Wachtel, London, England, U. K.
31. George L. Wied, Chicago, Illinois, U. S. A.
32. Hans Klaus Zinser, Cologne, Germany.

Of the above contributors, Dr. Julieta Calderon de Laguna of Mexico, D. F., Mexico, submitted only comments, but no ballot. The ballots are a permanent record of the Editorial Office and may be inspected in this office.

The ballots were counted and evaluated. The evaluation is presented after each definition. The lower preference votes are not shown here at this time; only the number of "first preference" votes is shown.

Discussions of these definitions and comments on the opinion poll are invited from the readers of ACTA CYTOLOGICA and will be published as "Letters to the Editor."

DEFINITION No. I

IS THE TERM "CORNFIED CELL" SCIENTIFICALLY CORRECT AS APPLIED
TO EXFOLIATED CELLS FROM VAGINA AND UTERINE CERVIX?

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

YES, the term "cornified cell" is correct.

JEAN BERGER
Basel, Switzerland

YES, from the morphological point of view this terminology seems to be correct. It gives the graduation of differentiation. However, from the biological (cytochemical) point of view, the above terminology is attackable (the "cornified" cell does not necessarily stain acidophilic), but at this time I do not have a better name.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

NO, the term "cornified cell" is incorrect and should be REPLACED by the following ALTERNATIVE TERM: SUPERFICIAL CELL.

The word "cornified" has its derivation from the Latin word "cornu," meaning horn. I think this term should be abandoned since there is too much confusion with the term "keratinized." And no wonder! Keratin is derived from the Greek word "keras," meaning horn. If we are to avoid difficulties in terminology, it is apparent that we should not use words that have the same connotation for different cells. Therefore, I suggest that the word "superficial" be adopted.

It may be more correct to say superficial squamous cell, but I am sure this will be shortened to superficial cell, and as long as we are concerned here with only gynecologic cytology I would still prefer to use the term "superficial cell."

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

YES, the term "cornified cell" is correct if the term is not used to include all cells which show a predilection for acidophilic stains.

J. PAUL PUNDEL
Luxembourg, Luxembourg

NO, the term "cornified cell" is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINOPHILIC (KARYOPYKNOTIC) SUPERFICIAL CELL.

I recommend this term because of the arguments which I have presented since 1950 in the following monographs and papers:

1. Les frottis vaginaux et cervicaux. Masson, Paris, 1950.
2. Les frottis vaginaux endocriniens. Masson, Paris, 1952.
3. Necessité d'une terminologie précise et standardisée en cytologie génitale.
First Int. Symposium on Cytology, Brussels, 1957, and La Semaine
des Hôpitaux (Paris), 1953, 34, 200.
4. Acquisitions récentes en cytologie vaginale hormonale. Masson, Paris, 1957.

The research and general understanding in vaginal cytology is complicated by the fact that English-speaking cytologists use the terms keratinization and cornification, or keratinized and cornified cells. This

referendum of the Terminology Sub-Committee of the I. A. G. C. has shown that the authors adopting such terminology sometimes apply these names in entirely different ways so that what one author means by keratinization is just the contrary of the meaning proposed by another.

To date I have not been able to find in cytological publications any clear description as to what should be understood by cornification and keratinization of the vaginal cells, terms indicating for some authors two different things, while for other authors, identical substances.

For French or German cytologists, there is no problem, because the term cornification does not exist in the French or German histological or cytological terminology, only the term keratinization, in French "Keratinisation," in German "Keratinisierung, Verhornung." In order to get more detailed information, I referred at random to some classic reference books on histology from my library, and here is what I found:

- A. French histology does not use the term cornification. The histologists speak only about keratinization, which appears in the skin as well as in the nails or hair. The normal vaginal epithelium shows only an antecedent of keratinization (presence of keratohyalin granules) in most superficial layers. In general, the French histology differentiates between two forms of keratin: the soft form of the skin and the hard form of the hair and nails. (Giroud and coll. 1934, Policard, 1950)
- B. German histology uses the same terminology as the French without any important difference. The superficial layer of the vaginal epithelium is sometimes called stratum corneum, but the appearance of keratohyalin granula which characterizes this layer is considered only an antecedent of actual keratinization. However, according to the commonly used French and German terminology (Stoehr, 1951; Bargmann, 1951; Bucher, 1948), the appearance of squames (anucleate cells) in the superficial layers of the vaginal epithelium is a result of keratinization.
- C. From American or English histology, I give two references: In the Histology of Maximow and Bloom (1948) the general term used is cornification, which applies to the vagina and the skin as well as to the nails and hair. Concerning the vagina I read: "Under normal conditions the superficial cell layers in primates do not show cornification, although they contain granules of keratohyalin. The nuclei usually remain stainable and the cells become loaded with glycogen and fat. In a prolapsed vagina, when the mucous membrane is exposed to air, the superficial cells are cornified as in the epidermis." In this book, the term keratinization is not registered.

In the Histology of Ham (1953), the only term used is keratinization, for the vagina as well as for the skin, the nails and the hair. The author makes a distinction between two types of keratinization, but there is no special type referred to as cornification. On page 739, I read: "There is no time in the menstrual cycle when the epithelium (of the vagina) becomes frankly keratinized. At the time of ovulation, which is the counterpart of estrus, the epithelium may show certain tendencies toward keratinization, but unless the epithelium is unduly exposed to air or some other unusual environmental factor, it does not develop true keratin and hence the surface cells always contain nuclei."

After this short review of some classical textbooks of histology, I would propose the following conclusions:

The term cornification exists only in the English terminology. It is used sometimes to describe exactly the same process which other authors call keratinization. Since the English-speaking histologists have not differentiated between these two terms, other cytologists should not apply the terms keratinization and cornification in vaginal cytology to describe two different phenomena. Furthermore, these terms should not be used at all in vaginal cytology to describe cells, because the terms implicate a cytochemical interpretation which is not possible by the classical staining techniques used for routine cytological diagnosis.

If these terms have to be maintained in genital cytology, it is absolutely necessary that the authors who like to use them give us:

1. a clear cut definition of the terms "keratinization" and "cornification," especially if these terms are not thought to be synonymous.
2. a scientific demonstration to substantiate that the cells they consider as keratinized or cornified by the usual Papanicolaou or Shorr technique are really cells with keratinization or cornification of the cytoplasm, according to a cytochemical and/or generally acceptable terminology.

However, as long as there exists no definite definition and no general agreement, the terms keratinized or cornified describing vaginal epithelial cells should not be used in exfoliative cytology. Furthermore, there is no need for such terminology, because we have other, more precise terms to describe the vaginal cells without using these hypothetical interpretations. Also, the maintenance of this interpretative terminology will be a continuous cause of misunderstanding, even among English-speaking cytologists.

THEREFORE, I WOULD VOTE FOR ABANDONING THE USE OF THE TERM "CORNIFIED CELL," AND SUBSTITUTE THE FOLLOWING ALTERNATE TERM: "EOSINOPHILIC (KARYOPYKNOTIC) SUPERFICIAL CELL."

References:

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- Policard, A.: Precis d'histologie physiologique, Doin, Paris, 1950.
- Stoehr, Ph., Jr.: Lehrbuch der Histologie und der mikroskopischen Anatomie des Menschen. Springer, Berlin, 1951.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U. S. A.

YES, the term "cornified cell" is correct.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

NO, the term "cornified cell" is incorrect and should be REPLACED by the following ALTERNATIVE TERM: SUPERFICIAL SQUAMOUS MUCOSAL CELL.

A cornified cell is a cell derived from a horny layer; however, unlike the skin, the normal cervical or vaginal mucosa does not have a well-developed horny layer. A cell derived from an abnormal cervical mucosa characterized by an excessive production of keratin might better be designated an "anucleate squame."

Thus, while the term "cornified" or "keratinized" is correct when applied to the cells which originate in the stratum corneum of the epidermis it is not applicable to the cells which arise from the surface layers of a mucosal surface.

Keratin itself is an albuminoid containing a rather high percentage of cystine which is rather resistant to hydrolytic agents. Since the cells which originate in the vaginal and cervical mucosa contain precursors of keratin, but not true keratin, it might be more advantageous to designate them by a purely descriptive terminology rather than to imply a total absence or presence of keratin. The term "superficial cell" in itself is not sufficiently specific.

PETER STOLL
Heidelberg, Germany

NO, the term "cornified cell" is incorrect. Histochemically, there is only formation of pre-keratin found. Up to now one could not differentiate "keratinized" from "cornified" cells. The term "cornified" cells should be ABANDONED.

In the normal vaginal epithelium these cells should be called: SUPERFICIAL EOSINOPHILIC CELLS.

GUILLERMO TERZANO
Buenos Aires, Argentina

NO, the term "cornified cell" is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINOPHILIC SUPERFICIAL CELL.

The vaginal epithelium is similar to the skin, with cells representing different stages of maturation and differentiation, from the basal cells to the superficial cells. In the skin, concomitant with differentiation there is keratinization of the cells as a progressive change from the basal to the superficial type. Cells of the superficial layers of the vaginal epithelium contain eleidin and keratohyalin, but they do not show actual keratinization or cornification.

To say that there is a "cornified" cell type is correct for the smears of rodents, because in the guinea pig, at the end of the first stage, there is an intermediate period during which there is a prevalence of "elongated cornified cells without nucleus;" also, the second smear stage in rats is known as "the cornified stage." In the human the results are not as clearcut as in rats since normally "no cornification occurs in the human vaginal epithelium." Under normal conditions the superficial layers of the vaginal epithelium "do not show cornification, although they contain granules of keratohyalin" (Papanicolaou).

Little is known concerning the mechanism of synthesis of keratin or of the enzymes involved in this important process. As many skin diseases are characterized by abnormalities in keratinization and "eventual solutions to those disorders must await further knowledge of the biochemistry of keratin synthesis," the process of partial cornification and keratinization in the superficial layers of the vaginal epithelium must await biochemical studies performed during the different phases of cell maturation and differentiation. The term "cornified cell" has been used for so many years that continuance of its use would appear to be justified, but we consider this term incorrect when it is used to designate the superficial eosinophilic cells cast off from the normal vaginal epithelium, though under the effect of certain stimuli "the epithelium possesses the potentiality to form keratin."

This term should be restricted to the actually cornified cells found in smears of women with prolapse, keratosis, leukoplakia, etc. (in which the superficial cells may become keratinized or cornified to a degree that borders on the pathological) and to squamous cells derived from the vulva.

My alternative term for the so-called cornified cell is: **EOSINOPHILIC SUPERFICIAL CELL**.

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Pundel, J. P.: *Les frottis vaginaux endocerviniens*, Masson, Paris, 1952, p. 82.
Ramon and Cajal, S.: *Elementos de Histologie Normal*, Ed. Cientifico-Medica, Barcelona 13th ed., 1950, p. 689.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

NO, the term "cornified cell" is incorrect and should be REPLACED by the following ALTERNATIVE TERM: **SUPERFICIAL SQUAMOUS CELL**.

The terms "cornification" and "keratinization" describe the same cellular feature, namely, a degenerative process by which the superficial cells of the stratified squamous epithelium gradually develop into dead, horny, anucleate squames, as in the epidermis.

Most medical and language dictionaries consider a "keratinized cell" and a "cornified cell" by definition synonymous. A "keratinized cell" signifies a cell which contains keratin. A "cornified cell" identifies a cell which contains "cornu" (horn) -- the characteristic content of which is keratin. Therefore, the term "cornified" is not used in its true scientific sense unless applied to a cell which contains keratin.

Since normal cells from the vagina and ectocervix do not usually contain keratin, it would seem logical to omit the term "cornified" as scientifically incorrect.

Many additional difficulties are encountered when translating these terms into other languages; e.g., in German the translation of the term "keratinized" is VERHORNT, which means "containing horn," while the term "cornified" has no distinct translation and is translated as VERHORNT also. For this reason the term "cornified" is used in Germany usually in its English form.

A reason commonly advanced in favor of the term "cornified" cell, that it has become universally recognized as a distinct entity, is a weak argument since there has never to date been a definite decision upon cytological terminology. We now have the opportunity to correct all confusing nomenclature. In any case, there is no doubt that the nucleated superficial squamous epithelial cells occurring normally in the vagina and ectocervix DO NOT CONTAIN KERATIN and, therefore, are not "cornified."

What arguments can be brought against the above proposed alternative terminology?

1. It could be said that "pyknosis" is not an absolute quality, but that there are gradual degrees of nuclear degeneration which might be identified as almost pyknotic or partly pyknotic. Is there a dividing line? Yes, there is a dividing line: (a) one could use the phasemicroscope to classify arbitrarily as pyknotic all nuclei which shine a bright red. This gives excellent, reproducible results, or (b) one could call all dense nuclei of the size of 6μ and smaller, pyknotic. In any case, this dividing line of nuclear quality is considerably sharper than the one of those authors who advance the claim that they are able to differentiate their "superficial cells with vesicular nuclei" from "intermediate cells with vesicular nuclei." So far, I have not heard any solid criterion on which they base this differentiation. Certainly it could not be merely the size of the cells or their degree of folding. We know that there are small cells derived from the most highly proliferated layers.
2. It could be said that a cell could not be called "intermediate" when it derives from the surface layer of the epithelium, actually, and not from the true histological intermediate layers. This is true. However, the same authors also usually find it, on the other hand, perfectly correct to call a cell "parabasal" or "basal" which also actually comes from a surface layer of the epithelium. In cytology we speak of the cell type, and not of the histological cellular layer. If the "intermediate cell type" represents the surface layer, we will have this type of exfoliation; and, if the "parabasal-basal cell type" represents the surface layer, we will find this type of exfoliation. Finally, if the "superficial cell type" represents the surface layer, we will have this type of exfoliation.

May I summarize my suggested alternative terminology: SUPERFICIAL SQUAMOUS (EPITHELIAL) CELL (containing pyknotic nucleus) as contrasted with ANUCLEATE SQUAME (containing no nucleus) and as contrasted with INTERMEDIATE SQUAMOUS CELL (containing a vesicular nucleus).

HANS KLAUS ZINSE
Cologne, Germany

YES, the term "cornified cell" is correct.

COMMENTS OF PARTICIPANTS IN THE OPINION POLL WHICH DIFFERED FROM THOSE OF
TERMINOLOGY SUB-COMMITTEE ON CYTOLOGICAL DEFINITIONS

JULIETA C. de LAGUNA
Mexico, D. F., Mexico

I agree with Pundel on the importance of the translation aspects of the terminology, in order to have a more universal nomenclature. In Spanish we have the term CORNIFICACION with the same meaning as the English CORNIFICATION. They are incorrect terms. Nevertheless, the term CORNIFICADA is a simple one in very common usage. The alternative term KARYOPYKNOTIC SUPERFICIAL CELL seems better, omitting the word "eosinophilic", inasmuch as we think that the basophilic cells can be included because the importance resides more in the nuclear characteristics than in the staining properties of the cells.

"Squamous" in Spanish is translated "epitelio estratificado plano," so any term containing it would be very long.

With this in mind, the different cells would be termed:

Proposed Name	Characteristics	Old Name
Karyopyknotic superficial cell	Acidophilic and basophilic cells; non-hyperkeratotic	Cornified cell
Superficial cell with vesicular nucleus		Precornified cell
Intermediate cell	Predominant in pregnancy: navicular cells, oyster cells, etc.	Intermediate cell
Basal or parabasal cell	Outer layer of "stratum spinosum"	Basal cell
Basal cell	Inner layer	Inner basal cell

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE TERM "CORNIFIED CELL"

61 "first preference" votes were cast in this division; the following preferences have been expressed:

5 "first preference" votes were cast for definitions which stated that the term CORNIFIED CELL is correct.

56 "first preference" votes were cast for definitions which stated that the term CORNIFIED CELL is incorrect and should be replaced. Of these votes the following alternative suggestions were voted upon:

42 for EOSINOPHILIC (KARYOPYKNOTIC) SUPERFICIAL CELL

7 for SUPERFICIAL SQUAMOUS CELL

6 for SUPERFICIAL CELL

1 for SUPERFICIAL SQUAMOUS MUCOSAL CELL.

CONCLUSION

The majority of the participants in the opinion poll (56 out of 61 votes) expressed the desire that the term "cornified cell" be abandoned and replaced by the alternative term EOSINOPHILIC (KARYOPYKNOTIC) SUPERFICIAL CELL (42 out of 61 votes).

DEFINITION No. II

IS THE TERM "ACIDOPHILIA" (OR "ACIDOPHILIC") SCIENTIFICALLY CORRECT AS APPLIED TO VAGINAL AND CERVICAL CELLS FIXED AND STAINED ACCORDING TO THE PAPANICOLAOU TECHNIQUE?

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

YES, the term is correct.

JEAN BERGER
Basel, Switzerland

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINO-PHILIC.

We cannot speak of "true acidophilia," so-called by Lichtwitz. I believe that only "description of staining" would be better, for example: "eosinophilic cell" or a red colored cell.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINO-PHILIA.

Since all the stains in the routine Papanicolaou procedure are on the acid side (Harris Hematoxylin pH 2.75, EA-50 pH 5.80, Orange G pH 5.75), it is not correct to speak of acidophilia. Eosinophilia would be a more correct term.

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

YES, the term is correct but not always used correctly.

J. PAUL PUNDEL
Luxembourg, Luxembourg

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINO-PHILIC.

In genital cytology stained after Papanicolaou or Shorr, the "acidophilic" cells are those cells the cytoplasm of which takes on a red or orange stain. But this term is technically in error because the affinity of the cytoplasm of some vaginal cells for red stains has nothing to do with the real acidophilia in the histological sense of the word (research done by Lichtwitz and coll., 1949; Vokaer, 1953; Ebner, 1954; Papamiltiades and Corre, 1954) nor has the blue or green staining of the cytoplasm a real basophilic etiology. Neither the Papanicolaou nor the Shorr staining contains any basic stain, and for the moment we ignore nearly all of the chemical process underlying the different affinity of the cytoplasm for stains.

For these reasons I have preferred to abandon definitely the terms of acidophilia and basophilia and adopt only those of eosinophilia and cyanophilia (Pundel, 1952, 1957), so that the terms indicate only the color staining reaction, are descriptive rather than interpretative. Furthermore, Papamiltiades and Corre (1954) have shown that by modifications of the staining technique, the same stain in one formula is fixed by the superficial cells which generally take the red stains and in another formula only by the usually cyanophilic cells. For these reasons I believe that the terms acidophilia and basophilia should be abandoned as scientifically incorrect.

For references, see: Pundel, J. P.: Acquisitions recentes en cytologie vaginale hormonale, Masson, Paris; and: Necessite d'une terminologie precise en cytologie genitale, La.Sem. des Hopit., 1958, 34, 200.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U.S.A.

YES, I think this term is correct in a broad sense, but is not as specific as EOSINOPHILIC.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

YES?? I suppose this is acceptable. It is more commonly used as an adjective, "acidophilic." "Acidophilia" is not listed in Webster's Unabridged Dictionary.

The procedures which are usually employed in staining cells from the female genital tract are not specific in the sense that the Feulgen reaction is a specific stain for DNA. While it is true that the dyes employed in the staining technique described by Papanicolaou are acid with a pH range of 2.7 - 5.8, the reaction in the cell cytoplasm and nucleus is not solely based on an acid base reaction.

PETER STOLL
Heidelberg, Germany

YES, the term is correct. "Acidophilic" means affinity for acid stains but not for stains in acid solutions. In gynecological cytology we incorrectly refer to red-staining cells as acidophilic. The term "red" or "EOSINOPHILIC" should be used instead.

GUILLERMO TERZANO
Buenos Aires, Argentina

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINOPHILIC.

Staining techniques to study exfoliative vaginal cytology in smears have been used in a more or less empiric way. It is known that the cytoplasm of the cells derived from the vaginal epithelium may take up either acid or basic dyes. Sometimes the cytoplasm of similar types of cells may take an acid dye in one solution and a basic dye in another solution. Regarding the staining of the cytoplasm, one should take into consideration the physicochemical processes that depend on the dye and all those that depend on the cell itself (density, power to retain stains, COOH-groups, iso-electric point of the amino acids, etc.). For these reasons, it would be better to say "tinctorial affinity" of the vaginal cell treated with a known determinate solution.

Papanicolaou (1933) pointed out an actual "start" when "after using vaginal staining fluids, (he) succeeded in developing a simple stain which secures a sharp outline of the various cell types, with a variety of shades from an intense blue to an eosin red." It was important to learn that cells derived from the same layers of the vaginal epithelium (the superficial) may show different tinctorial affinities. The most superficial cells, containing eleidin, take up but one of the acid dyes: eosin.

When intense "acidophilic color reaction" was observed in the superficial cells, it naturally followed that the cells of the same smear that did not appear pink were called basophilic, and from then on the vaginal cells were called acidophilic and basophilic. The staining techniques described by Papanicolaou and by Shorr led to an incorrect statement: As all the dyes are acid (light green eosin and Orange G) all the cells are acidophilic. The error will be easy to correct by returning to the actual bases of modern cytology described in Papanicolaou's original papers, and exchanging the terms "acidophilic" and "basophilic" for correct terms.

Scientifically speaking, therefore, we consider ourselves not qualified enough to call a cell either acidophilic or basophilic. Pundel's observation (1952) called our attention to this. Not being qualified to explain all the intimate mechanisms that command the chromatic affinity of the cells, we should not apply the term "acidophilic" only to the most superficial cells of the vaginal epithelium, because in this particular circumstance, with the staining solution we use, all the cells are acidophilic.

In order to retrieve this error, we must first adopt a correct procedure to obtain, fix and stain the specimen (always in the same way to keep any artifact constant) and then describe the cells (with their morphological features) as eosinophilic, orangeophilic, light greenophilic, or use conventional names such as Alpha, Beta, Gamma cells of the vaginal epithelium. The former would apply to Papanicolaou's or Shorr's technique; the latter would be necessary to recognize which correspond to which.

The discussion of this important point (apart from bringing to light a false concept) will pave the way to new research in this field. The cells of the vaginal epithelium, with the many degrees of differentiation and maturity that they exhibit, offer the biochemist a fine opportunity to study the phases of cell growth. This would make available, no doubt, specific staining solutions, and then it would be possible to speak correctly of "reactions" as we do of the Feulgen reaction.

THE TERMS "ACIDOPHILIC" AND "BASOPHILIC" SHOULD BE ABANDONED AND REPLACED BY "EOSINOPHILIC" AND "CYANOPHILIC."

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GEORGE L. WIED
Chicago, Illinois, U. S. A.

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINOPHILIC.

The term "acidophilic," per se, is correctly used if applied to a cell or a cell constituent which has a selective affinity for ACID stains. However, as regards using the term "acidophilic" for cytological specimens which have been stained according to the Papanicolaou technique, I believe that the term "acidophilic" is not sufficiently definitive since all Papanicolaou stains have an acid pH.

I would suggest abandoning the use of the term "acidophilic" when referring to cells stained according to the Papanicolaou technique and substituting the term "eosinophilic."

I would also, in this connection, second the motion of Pundel to replace the term "basophilic" with "CYANOPHILIC," thus designating only a blue color rather than an affinity for basic stains, since these are non-existent in the routine Papanicolaou technique.

HANS KLAUS ZINSER
Cologne, Germany

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: EOSINOPHILIC.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE TERM "ACIDOPHILIC"

129 "first preference" votes were cast in this division; the following preferences have been expressed:

4 "first preference" votes were cast for the term ACIDOPHILIC.

125 "first preference" votes were cast for the term EOSINOPHILIC. Of these 125 votes, 17 votes were cast for definitions which states that the term "acidophilic" is correct, but should be replaced by EOSINOPHILIC, whereas the remaining 109 votes were cast for definitions which expressed the opinion that the term "acidophilic" is incorrect and should be replaced by EOSINOPHILIC.

CONCLUSION

The majority of the participants in the opinion poll expressed the desire that the term "acidophilic" (and "acidophilia," respectively), which they consider incorrect as applied to cytological smears of the female genital tract stained with the routine Papanicolaou technique, should be replaced by EOSINOPHILIC (and EOSINOPHILIA, respectively).

DEFINITION No. III

IS THE TERM "HYPERCHROMATOSIS" SCIENTIFICALLY CORRECT AS APPLIED TO CELLS EXFOLIATED FROM VAGINA AND UTERINE CERVIX?

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: HYPERCHROMASIA.

JEAN BERGER
Basel, Switzerland

YES, the term is correct.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

YES, this term is correct and implies an increased production of nuclear chromatin. There is no doubt that some nuclei stain darker than others. It could be postulated that some substance other than chromatin was present and that increased staining quality alone was not enough evidence of increased chromatin production. It is fortunate that desoxynucleic acid has such a specific and striking absorption in the ultra-violet because of the presence of the purine and pyrimidine groups. There are nuclei which show a marked increase in ultra-violet absorption and such increase in absorption can only be interpreted as an increase in desoxynucleoprotein, the material the cytologist calls chromatin. Alternative term: HYPERCHROMASIA.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

YES, the term is correct if it is used to indicate an increase in the chromatin content of the nucleus and not merely a deeper staining with nuclear stains such as hematoxylin. Perhaps "HYPERCHROMASIA" sounds a little better than "hyperchromatosis."

J. PAUL PUNDEL
Luxembourg, Luxembourg

YES, the term is correct. I do not believe that I should comment on the choice of terms in this instance because this is only a question for the English language. In French, only the term "hyperchromatisme" is used, which means only a deeper staining reaction than normally expected, generally applied to the nucleus but also to the cytoplasm.

In general, the diagnosis of hyperchromatism is based upon a subjective estimation. For objective evaluation, only photometry can be used (for example, the histophotometer of Lison). I think in considering this particular terminology we should not use the term hyperchromatism in a sense which differs from its use in general histology or basic cytology.

SUMMARIZING, THEN, I WOULD AGREE TO THE MEANING OF THE TERM AS (A) STAINING TOO DARKLY, AND (B) APPLIED DESCRIPTIVELY TO BOTH THE NUCLEUS AND THE CYTOPLASM.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U.S.A.

NO, the term is incorrect and should be REPLACED by the following ALTERNATIVE TERM: HYPERCHROMASIA.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

YES?? This term does not appear in Webster's Unabridged Dictionary. The adjective is noted in some medical dictionaries. HYPERCHROMATISM might be better, although the term is not ideal.

The term itself implies an intense absorption of dye and is usually applied to the nucleus. The implication is that the nuclear staining is more intense than is observed in the normal interphasic nucleus. Although a hyperchromatic nucleus may well contain an increased content of DNA, this is not necessarily the case. Thus, hyperchromatism does not necessarily imply an increased DNA content. Unfortunately, a cell which is hyperchromatic to one observer may not be considered hyperchromatic by another microscopist and thus the term is of only limited usefulness.

PETER STOLL
Heidelberg, Germany

YES, the term is correct. In German we usually say "HYPERCHROMASIE," referring to the dark staining of the nuclear material with hematoxylin. In the case of too darkly stained cytoplasm we say "hyperchromasia of the cytoplasm."

It is a matter of convention to differentiate the dark stained nuclei as "hyperchromatotic" and the too darkly stained cytoplasm, "hyperchromatic."

GUILLERMO TERZANO
Buenos Aires, Argentina

YES, the term is correct. Hyperchromatosis, meaning "an increased staining capacity of any structure," is a term that, etymologically-speaking, seems correct, but I would rather recommend the terms HYPERCHROMATISM, HYPERCHROMASIA or HYPERCHROMIA (excess of color) since hyperchromatosis may convey the idea of pigmentation. I PREFER THE TERM HYPERCHROMASIA.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

YES, the term is correct. The terms "hyperchromatosis," "hyperchromasia" or "hyperchromatism" all seem to indicate the same entity, although one can find slightly different shades of interpretation in different dictionaries.

Nuclei which stain too darkly (hyper=over, chromatikos=relating to color) are "hyperchromatic." These hyperchromatic nuclei usually contain an increased amount of chromatin. To me, "hyperchromatic" means only "staining too darkly." In this sense one can also use the term to describe too darkly stained cytoplasm.

However, as "chromatosis" refers to a disease of pigmentation or a pathologic process involving abnormal pigment deposition, I would prefer to use the terms "HYPERCHROMASIA" or "HYPERCHROMATISM" instead of "hyperchromatosis."

HANS KLAUS ZINSER
Cologne, Germany

YES, the term is correct.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE TERM "HYPERCHROMATOSIS"

111 "first preference" votes were cast in this division; the following preferences have been expressed:

- 12 "first preference" votes were cast in favor of definitions which stated that the term HYPERCHROMATOSIS is correct.
- 8 "first preference" votes were cast in favor of the term HYPERCHROMATISM.
- 91 "first preference" votes were cast in favor of the term HYPERCHROMASIA.

CONCLUSION

The majority of the participants expressed the desire to use the term HYPERCHROMASIA. No definite conclusions could be drawn from the comments as to whether this term refers to "increase in chromatin content" or only to "a deeper staining reaction than normally expected" since this question was not asked in the main heading. It could also not be determined whether the majority felt that the term "hyperchromasia" should be used only for describing nuclear or also for cytoplasmic properties.

DEFINITION OF "KARYOPYKNOSIS"

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Small hyperchromatic nucleus.

JEAN BERGER
Basel, Switzerland

Diminution of the diameter of the nucleus and dissolution of the "minute-structure" of the nucleus. The condensation often leaves a perinuclear vacuole formerly occupied by the whole nucleus.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

A deeply staining, usually contracted nucleus in which no nuclear detail may be observed. The nuclear material is smooth and homogeneous and individual nuclear particles have coalesced. I suggest the term "PYKNOTIC" instead of "karyopyknotic."

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

The condensation of the chromatin content of the nucleus into a structureless, dense, and deeply staining mass.

J. PAUL PUNDEL
Luxembourg, Luxembourg

1. Normal or physiological karyopyknosis: the nuclear retraction or condensation is at its physiological maximum as seen only in the superficial cells. Criteria: either the nuclear diameter is less than 6 μ or a bright red color is obtained under phase contrast microscopy.

2. Abnormal or pathological karyopyknosis, as in cellular degeneration, which can occur in atrophic basal cells or in inflammation: this has no hormonal significance.

For complete arguments, refer to the following papers (with complete references):

Pundel, J. P.: Acquisitions recentes en cytologie vaginale hormonale, Masson, Paris, 1957.
Pundel, J. P. and Lichtfus, C.: La pycnose nucleaire des cellules vaginales. Etude critique des differents criteres. Necessite d'une definition precise et standardisee.
Bull. Soc. R. Belge de Gyn. et Obst., 26: 630, 1956.

For practical purposes, however, I propose the following solution: degenerative retraction or condensation of the nucleus, with loss of all nuclear structure, so that the nucleus shrinks to a dense, structureless mass of chromatin, causing an aberration of the light under the phase microscope even in stained smears (10x or 40x magnification), thus producing a bright red colored nucleus.

For practical purposes, the definition or the evaluation of the karyopyknotic index (which is based only upon the pyknotic nuclei of the superficial cells) should be based upon the phase contrast picture. The results are nearly the same as those obtained by exact micrometry of the nuclei under oil immersion, but this latter technique is too time-consuming in general practice. For scientific purposes, especially in cases of contest or disagreement, only the exact micrometric technique should be used, taking as criterion a nuclear diameter less than 6 μ .

I would repeat that this problem is very important. The general definitions given by some authors are too subjective, and with these definitions one cytologist can find in the same smear a K. P. I. of 70%, while another cytologist arrives at only 20%. Such differences are frequent with the usual subjective evaluations and each cytologist believes that he is right and that the other is wrong. That is the origin of some unnecessary polemics, which could have been avoided if the discussant had used an objective criterion, such as phase microscopy or micrometry of the nucleus. One single, precise, objective criterion is better than milelong definitions without any precise element.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U.S.A.

Increase in the density of the nucleus, usually accompanied by condensation and degeneration.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Why use the prefix "karyo" in this instance instead of "pyknosis" or "pynosis"? The latter is a manifestation of degeneration in which the nucleus becomes reduced to a dense, structureless mass.

This is an indication of impending cell death. In the cells of the cervical or vaginal mucosa, it denotes the final stage in the life cycle of the cell. It is not confined alone to normal cells originating in the cervix and occurs in the cells of many abnormal processes. Since their nuclear masses may be quite large prior to the process of death, the resultant nuclear masses are larger than those observed in normal squamous cells from the cervical mucosa. The prefix "karyo" is superfluous and pyknosis is a well-established term. The addition of "karyo" adds nothing and, therefore, seems unjustified.

ALTERNATIVE TERM: PYKNOSIS.

PETER STOLL
Heidelberg, Germany

Shrinkage of the nucleus associated with nuclear condensation and loss of nuclear structure. In the Feulgen reaction it is shown that the DNA-content is not increased as compared with nuclei of intermediate cells.

$$\text{Cytometrically: } \frac{\text{Nucleus}}{\text{Cytoplasm}} = \frac{1}{10} \text{ or } \frac{1}{10}$$

(mean nuclear diameter:mean cellular diameter)

For general use we should define the term "karyopyknosis" in its morphological sense as is done by Dr. Papanicolaou.

More research in cytometric and cytochemical definition of karyopyknosis will have to be done.

GUILLERMO TERZANO
Buenos Aires, Argentina

KARYOPYKNOSIS (from the Greek: pikno = thick, dense) is a form of degeneration of the nucleus, characterized by condensation and reduction in size. The amorphous chromatin appears darkly stained and no structural details can be distinguished. I agree especially with Dr. Reagan.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Karyopyknosis is a degenerative condensation of the nucleus in which the chromatin shrinks to a dense, structureless mass.

For practical use in cyto-hormonal evaluation of smears, I would define a stained nucleus as pyknotic if it shines with a bright red color under the 10x magnification (also under 20x or 40x magnification, but not under the oil immersion) of a phase microscope (see "Suggested Standard of Karyopyknosis," Fertility and Sterility, 6:61, 1955).

Nuclei which are smaller than 6 μ are generally pyknotic, but these measurements take too much time for routine purposes. The bright red color when using the phase microscope seems to be the easiest and most objective standardization for "karyopyknosis" that I know. It avoids individual differences in interpretation of the so-called karyopyknotic index which is used in some laboratories as a relative measurement of estrogen effect.

HANS KLAUS ZINSER
Cologne, Germany

Karyopyknosis is a homogeneous condensation of the nucleus in which the details of the nuclear structure (chromatin, nucleolus) disappear.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE DEFINITION OF "KARYO-PYKNOSIS"

61 "first preference" votes were cast in this division; the following preferences were expressed for definitions of Members of the Terminology Sub-Committee:

12 votes - J. Paul Pundel
9 votes - Ruth M. Graham
8 votes - George N. Papanicolaou
8 votes - James W. Reagan
7 votes - George L. Wied
5 votes - Hans Klaus Zinser
4 votes - Peter Stoll
4 votes - Guillermo Terzano
2 votes - J. Ernest Ayre
2 votes - Abraham E. Rakoff
0 votes - Jean Berger

Drs. Pundel and Wied gave similar definitions; Dr. Terzano expressed agreement with the definition by Dr. Reagan; Dr. Stoll indicates that he agrees with the definition of Dr. Papanicolaou.

CONCLUSION

There has not been an absolute majority vote for any of the given definitions. The highest number of individual "first preference" votes (12) was cast for the definition of J. Paul Pundel. The DEFINITION OF KARYOPYKNOSIS by J. Paul Pundel reads:

"... For practical purposes I propose the following solution: Degenerative retraction or condensation of the nucleus, with the loss of all nuclear structure, so that the nucleus shrinks to a dense, structureless mass of chromatin, causing an aberration of the light under the phase microscope even in stained smears (10x or 40x magnification), thus producing a bright colored nucleus. For practical purposes, the definition or the evaluation of the Karyopyknotic Index (which is based only upon the pyknotic nuclei of the superficial cells) should be based upon the phase contrast picture. The results are nearly the same as those obtained by exact micrometry of the nuclei under oil immersion, but this latter technique is too time-consuming for general practice. For scientific purposes, especially in cases of contest or disagreement, only the exact micrometric technique should be used, taking as criterion a nuclear diameter less than 6 μ ..."

DEFINITION No. V

DEFINITION OF A "BASAL CELL"

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

A small, round, basophilic staining cell with a nucleus that is relatively large. It is considered to be the most immature of the squamous cells arising from the deep layer of the epithelium.

JEAN BERGER
Basel, Switzerland

Cell of the germinative layer. A small polygonal cell with an irregular outline. The nucleus is relatively large and dark.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

A round or oval cell, the benign nucleus of which is surrounded by cytoplasm. The amount of cytoplasm varies widely from the small, inner layer basal with a thin rim to the large, outer layer basal with abundant cytoplasm. The round or oval configuration of the cytoplasm completely surrounding a benign nucleus identifies the cell as a basal cell.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

A basal cell is one that is derived from the basal zone of the epithelium of the vagina or the ectocervix.

J. PAUL PUNDEL
Luxembourg, Luxembourg

A round or oval squamous cell which presents no definite evidence of differentiation either in the cytoplasm or the nucleus.

In the strict sense of the term, one should apply the term "basal cell" only to the cells shed from the single deepest layer of the vaginal or cervical squamous epithelium. But these basal cells appear only in abnormal conditions, as after epithelial traumatism, destructive infections or true cervical erosions. Under normal conditions one finds only parabasal cells in the vaginal or cervical smear, even in cases of advanced atrophy. As the parabasal cells are of the same undifferentiated cell type as the basal cells, their differential diagnosis is based only upon subjective estimation of the volume or shape, which again can differ from one cytologist to another. So it seems to me that we could use the term basal cells to include both basal cell types. Round or oval squamous cells showing glycogen should not be considered in this definition as basal cells since they show definite cell differentiation. In order to obtain a better, objective classification of the vaginal cells, I believe that the classification in three mean types is completely sufficient: Basal cells: undifferentiated round or oval cells. Superficial cells: differentiated cells with complete nuclear pyknosis. Intermediate cells: cells with differentiation (glycogen content or shrinking of the nucleus) but without complete pyknosis. So, all cells showing differentiation or glycogen should be considered as intermediate cells, as long as their nuclei are not yet pyknotic, regardless of the cell form. Special cell types found, as for example, in cervical epidermization can be classified as abnormal intermediate cells or metaplastic cells, as suggested by Wied.

Summarizing, then, I would suggest that we keep the term basal cell, having it include all cells other than the superficial and intermediate cells. (The term parabasal cell should be abandoned.)

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U. S. A.

A cell arising from the deepest (first) row of the vaginal epithelium.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

The cells which are referred to in the literature as "basal cells" seldom, if ever, are derived from the stratum basalis. In most instances they are derived from an immature type of squamous metaplasia and rarely from an atrophic epithelium. While the cells of metaplastic origin have been described by McCorkle and Reagan, only the immature metaplastic cells resemble those which are called "basal cells." I believe that the SR cells described by Dr. Graham have a similar origin. The term parabasal is not entirely satisfactory since the cells in upper levels of the deep spinous layer have been referred to as parabasal cells. The cells in question do not take origin in this layer. Wherever possible the origin of the cells should be considered. If the cells originate in a metaplastic epithelium they should be so designated.

PETER STOLL
Heidelberg, Germany

A) Morphologically descriptive

B) Cytometrically: $\frac{\text{Nucleus}}{\text{Cytoplasm}} = \frac{1}{3}$ $\frac{(\text{mean nuclear diameter})}{(\text{mean cellular diameter})}$

C) Cytochemically: Polysaccharide reaction - negative
Toluidin Blue - slight metachromasia of the karyoplasm
Feulgen - nucleoli negative, fine chromatin structure, nuclear membrane positive
Fat - in small droplets in the cytoplasm
Alkaline phosphatase - slightly positive in the nucleus

Basal cells can be described morphologically and have definite cytometrical and cytochemical properties. Although they do not appear in a sample of normally exfoliated cells, this should not prevent us from giving them an exact description.

GUILLERMO TERZANO
Buenos Aires, Argentina

We feel that we have never seen actual basal cells in smears, not even in the most atrophic cases of castrated women. We are not absolutely sure of this, because their identification is difficult. It is possible that basal cells could have been mistaken for parabasal cells since a basal cell, columnar in sections, may look round or oval with a large nucleus in the smears, just as a deep parabasal cell does.

A parabasal cell is a round or oval cell, small in size, with a dense cytoplasm deeply staining in green or purple. Quite often no specific vacuoles are present. The nucleus, the size of which is about one-third the size of the cell, may sometimes show irregular borders. It is centrally located and has a well-defined chromatin arrangement.

THE TERM "BASAL CELL" SHOULD BE MAINTAINED, BUT ONLY TO INCLUDE SPECIAL SMALL CELLS WHICH APPARENTLY DERIVE FROM LAYERS DEEPER THAN "PARABASAL" CELL LAYERS.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

I do not use the term to describe cells normally exfoliated from the epithelium of vagina or ectocervix. By definition the "basal cell" should derive from a zone which cannot shed cells under normal conditions, unless there is a true erosion present.

The round or oval squamous cells found in a patient with epithelial atrophy I call PARABASAL CELLS, whereas I call the round or oval cells which are usually found in epidermizations METAPLASTIC CELLS. The latter are characterized by a large cytoplasmic vacuole, glycogen, and sometimes an eccentric nucleus.

I suggest that the usage of the term "basal cell" in any other than its pathological sense in exfoliative cytology be discontinued, or -- as a compromise -- be replaced by the term "BASAL-PARABASAL CELL."

HANS KLAUS ZINSER
Cologne, Germany

A basal cell is characterized by an unusually heavily stained nucleus which is surrounded by a small cytoplasmic margin.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE DEFINITION OF "BASAL CELL"

48 "first preference" votes were cast in this division; the following preferences were expressed for definitions of Members of the Terminology Sub-Committee:

10 votes - Guillermo Terzano
7 votes - George L. Wied
6 votes - Peter Stoll
5 votes - Ruth M. Graham
4 votes - J. Ernest Ayre
4 votes - J. Paul Pundel
4 votes - James W. Reagan
3 votes - George N. Papanicolaou
2 votes - Abraham E. Rakoff
2 votes - Hans Klaus Zinser
1 vote - Jean Berger

CONCLUSION

In a sense the definitions for which the three highest votes were cast express the same views, namely that the term BASAL CELL describes a cell which derives, apparently, from deeper layers than the PARABASAL CELL.

A definite agreement is not found even among Drs. Stoll, Terzano and Wied, who state similar opinions.

(The Members of the Editorial Board suggested that this subject be discussed more thoroughly in a special symposium - Ed.)

DEFINITIONS OF "ATROPHIC PARABASAL CELL" AND OF "HYPERTROPHIC PARABASAL CELL"

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

The atrophic parabasal cells are cells desquamated from the epithelium during conditions of atrophy or regression. They are the outer basal cells commonly seen after the menopause or castration and sometimes in primary amenorrhea.

The hypertrophic parabasal cell is the outer basal cell of the vaginal or cervical epithelium found in the post-partum period, occasionally during pregnancy and commonly during the menopause after hormonal therapy under conditions which may lead to hypertrophy of the squamous epithelium. It is a round or oval basophilic cell, somewhat larger than the basal cell, with a sharp cell border and more cytoplasm than the inner basal cell, while its nucleus may be slightly smaller in diameter.

JEAN BERGER
Basel, Switzerland

Atrophic parabasal cell: small, round to nearly oval form. The nucleus is voluminous and in the middle of the cell the nucleus shows a fine granulation or condensation of chromatin. The cytoplasm is blue colored.

Hypertrophic parabasal cell: irregular, round to oval cell often with an abnormal "spur." The nuclei are mostly eccentric and show notches. The chromatin is often structured, vacuoles may appear, and the cytoplasm is various shades of blue.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

I do not use either term!

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

The term "atrophic parabasal cell" may be used to describe cells of the parabasal type which have a relatively uniform and compact cytoplasm and a round or oval nucleus. Such cells are derived from a relatively atrophic epithelium as found in amenorrhea or menopause. They may show vacuolization but usually contain no glycogen.

The term "hypertrophic parabasal cell" may be applied to cells derived from a rather hypertrophic parabasal zone, which, as a rule, contain much glycogen in a large cytoplasmic vacuole. The nucleus may be round or oval and centrally located or may be pushed toward the periphery of the cell, being thus pressed into a cup-like form.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Atrophic parabasal cell: comes from an epithelium with little or no proliferative tendency. There is no glycogen reaction, and the nucleus presents a beginning of regressive or degenerative changes. Atrophic parabasal cells show a higher affinity for cytoplasmic and nuclear stains.

Hypertrophic parabasal cell: comes from an epithelium presenting a marked proliferative reaction. It shows an attempt or a tendency to differentiation with glycogen formation, and a nucleus that is normal or presents no regressive change.

I would like to make the following suggestion:

Normally the deep basal cells do not appear in the smear as they are covered by a more or less important layer of outer basal cells. Also, the parabasal cells of a hypertrophic epithelium, in general, do not appear in the smear except under androgenic stimulation because they are also covered by intermediate cells.

In general, with the exception of the androgen-stimulated cells, the hypertrophic parabasal cells which are considered for this discussion are exfoliated only in cases of cervical inflammations where the superficial layers have been destroyed or in true erosions from the surrounding epithelial proliferation or from epithelial atypias. The term cervical parabasal cell has in this way an etiological basis.

For practical purposes, it seems to be helpful to restrict the terms basal or parabasal cell to those cells exfoliating from the most superficial layers of an atrophic epithelium. These cells, appearing in the smears of all other conditions, should be considered either as cervical basal cells, or if glycogen is present and the form is normal, as intermediate cells; if the form is atypical, as metaplastic or atypical cells, mature or immature.

I would suggest that we call the small, round or oval cells usually found in smears from women with an atrophic epithelium, e. g., during the postmenopausal years, only **PARABASAL CELLS** or simply, **BASAL CELLS**.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U. S. A.

Atrophic parabasal cells = aglycogenic. Hypertrophic parabasal cells = glycogenic.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

The cells which are so designated in the literature may originate in an atrophic epithelium. From the descriptions, at least some of the hypertrophic parabasal cells originate in a more mature metaplasia. This category illustrates the great need for correlating cellular and tissue changes in order to determine the exact site of origin of the cells in question.

PETER STOLL
Heidelberg, Germany

In functional cytology we say only "**BASAL-PARABASAL CELL**," which is analogous to atrophic parabasal cell. In local cytology we say "**EROSION CELL**" for cells exfoliated from hypertrophic processes of the ectocervix, also from benign metaplastic processes.

I would also agree with use of the terms **VAGINAL PARABASAL CELL** and **CERVICAL PARABASAL CELL**.

GUILLERMO TERZANO
Buenos Aires, Argentina

Although I do not use such terms, my point of view is: an atrophic parabasal cell (the type found after the menopause, in the prepubertal stage, amenorrheas, etc.) belongs to the type described as parabasal cell by Wied. Hypertrophic parabasal cells are the cells usually derived from the ectocervical epithelium. They have different sizes: small, as a parabasal vaginal cell or as large as a superficial cell. The cytoplasm, dense, with large vacuoles of different types, may appear stained either green or violet, pink, or orange. In smears stained according to Papanicolaou's technique (we use it as routine) we cannot depend on the glycogenic content to differentiate these cells, but upon the morphological criteria.

I believe **BOTH TERMS SHOULD BE ABANDONED**, since they are included in the term "basal cells" and changed as follows: instead of "atrophic parabasal cells", **VAGINAL PARABASAL CELLS**; instead of "hypertrophic parabasal cells", **CERVICAL PARABASAL CELLS**.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

By "atrophic parabasal cell" some imply a round or oval squamous cell which occurs normally during childhood, in primary amenorrhea and after menopause; it usually contains no glycogen. I call only these **PARABASAL CELLS**. By "hypertrophic parabasal cell" is often implied a round or oval cell which contains often a large cytoplasmic vacuole, usually glycogen and sometimes an eccentric nucleus. These cells are not shed from a completely normal epithelium. I call these cells **METAPLASTIC CELLS**, "metaplastic" here relating to "change of form" and not to a histologic entity.

I admit that the term "**METAPLASTIC CELL**" is not ideal either. However, if one considers that the differentiation between the so-called atrophic parabasal cell and the so-called hypertrophic parabasal cell is often based on the criteria "glycogen containing" or "non-glycogen containing" on cytological specimens which are **NOT STAINED FOR GLYCOGEN**, the term "**METAPLASTIC**" (change of form) seems still better.

I believe it is not correct to call "atrophic parabasal cells" vaginal parabasal cells and "hypertrophic parabasal cells" cervical parabasal cells, as is done in some laboratories. The argument against this particular terminology is: (1) that one can observe cells exfoliated from the vagina in infections identical with those called "cervical parabasal cells" and (2) that one can definitely find an exfoliation of "vaginal parabasal cells" coming from the ectocervix in patients with senile epithelial atrophy. I do not feel that one can really make a distinction (expressed in a definite terminology) as to whether the cells are shed from the vagina or from the ectocervix.

HANS KLAUS ZINSER
Cologne, Germany

I do not use the term "atrophic parabasal cell." Instead of it, I use the term VAGINAL PARABASAL CELL. Definition: round or oval cell, usually staining blue with a nucleus that is centrally located and of regular outline.

I do not use the term "hypertrophic parabasal cell" either, because the term "hypertrophy" is related to findings in tissue. I call these cells CERVICAL PARABASAL CELLS. Definition: cervical parabasal cells are characterized only by the increased affinity of the cytoplasm for stains. The cellular form is variable and the nucleus is often eccentric and shows abnormal forms.

COMMENTS OF PARTICIPANTS IN THE OPINION POLL WHICH DIFFERED FROM THOSE OF
TERMINOLOGY SUB-COMMITTEE ON CYTOLOGICAL DEFINITIONS

JEAN de BRUX
Paris, France

We do not use either term.

It is our opinion that "basal cell" means: cell exfoliated from the inner or outer basal regenerative layers which is found in prepuberal and menopausal atrophy and in ulcerative erosions.

We call "parabasal cell" exfoliated cell of the metaplastic type as found in dysplastic lesions (ectropion or ectopy). This latter cell type may be differentiated from the former by the following characteristics:
(a) nucleus shows tendency towards pyknosis, (b) polychromatophilic or eosinophilic cytoplasm.

VIOLETTE M. NUOVO
Paris, France

By atrophic parabasal cell I imply a parabasal cell which has a nucleus presenting regressive or degenerative changes such as pyknosis or karyorrhexis. Very often the cytoplasm, instead of being stained blue as in non-atrophic parabasal cells, is stained orange. For the hypertrophic cell, I agree with the definition of Terzano.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE DEFINITIONS OF "ATROPHIC"
and "HYPERTROPHIC PARABASAL CELLS"

41 "first preference" votes were cast in this division; the following preferences were expressed for definitions of Members of the Terminology Sub-Committee:

9 votes - Ruth M. Graham
7 votes - J. Paul Pundel
5 votes - Guillermo Terzano
4 votes - J. Ernest Ayre
4 votes - George N. Papanicolaou
4 votes - George L. Wied
3 votes - James W. Reagan
3 votes - Hans Klaus Zinser
1 vote - Jean Berger
1 vote - Abraham E. Rakoff
1 vote - Peter Stoll

Drs. Ayre, Berger, Papanicolaou and Rakoff wish to maintain the terms ATROPHIC and HYPERTROPHIC PARABASAL CELLS (10 votes). Dr. Graham does not use either term (9 votes). Drs. Stoll, Terzano and Zinser wish to replace the terms "atrophic parabasal cells" and "hypertrophic parabasal cells" with the terms VAGINAL and CERVICAL PARABASAL CELLS (9 votes). Dr. Pundel wishes to replace the terms with PARABASAL CELL, or simply BASAL CELL (4 votes). Dr. Wied would like to replace the term "hypertrophic parabasal cell" with METAPLASTIC CELL (4 votes). Dr. Stoll suggests the term EROSION CELL instead of "hypertrophic parabasal cell" (1 vote).

CONCLUSION

No definite majority has been obtained for either terminology. The highest individual vote was given to Dr. Graham, who indicated that she does not use either term.

(The Members of the Editorial Board suggested that this subject be discussed more thoroughly in a special symposium - Ed.)

DEFINITION No. VII

DEFINITION OF AN "INTERMEDIATE CELL"

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

A moderately large, polygonal, basophilic cell, smaller than the superficial and its nucleus is smaller than that of the parabasal but larger than that in the superficial cell and the nuclear structure commonly appears vesicular.

JEAN BERGER
Basel, Switzerland

A polygonal cell with a rather large, vesicular nucleus, which often contains a vacuole. The cytoplasm is usually light blue in color.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

A large cell with squared-off sharp edges and no longer oval or round in shape. It has a preserved benign nucleus in which chromatin particles may be identified. It usually stains blue but on occasion may stain with eosin. There is a large amount of cytoplasm present.

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

The term "intermediate cell" applies to cells derived from the zone located between the parabasal and the superficial zones of the epithelium of the vagina and the ectocervix. This zone consists of cells of the navicular type and has been designated as an intermediate or navicular zone.

J. PAUL PUNDEL
Luxembourg, Luxembourg

I would like to make the following comment: The different cell layers of the vaginal epithelium are the result of a progressive differentiation, so that the distinct limits of the various layers are very difficult to fix clearly, even in the histological picture. In general, the intermediate layers are considered as the layers where definite cell differentiation starts, while the basal layers have only a proliferative function. As we have now for the diagnosis of the superficial cell one real objective criterion in the cell, pyknosis of the nucleus, we have here an objective criterion to differentiate the intermediate cells from the superficial cells (vesicular nuclei). It remains, however, to fix a clear differential criterion for distinguishing the intermediate cells from the basal cells.

The discussion, in my opinion, remains at the definition of the basal cell or the criteria which permit the differentiation of the basal cells from the intermediate cells when stained after Papanicolaou. I think that the vote could be limited to this part of the problem.

What differentiates the intermediate cell from the basal cell? (a) cell diameter?, (b) nuclear changes?, (c) cytoplasmic changes such as glycogenization?, (d) cellular form: round-oval for basal cells and polygonal for intermediate cells? I suggest the definition of the intermediate cell which reads as follows: "SQUAMOUS CELL PRESENTING A DEFINITE DIFFERENTIATION OF THE CYTOPLASM (GLYCOGEN), A BEGINNING RETRACTION OF THE NUCLEAR DIAMETER, BUT WITHOUT COMPLETE KARYOPYKNOSIS (NUCLEUS LARGER THAN 6 μ IN DIAMETER)."

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U. S. A.

A cell arising from the intermediate layer of the vagina, partially flattened, navicular or transitional shape, with a moderately large nucleus and basophilic cytoplasm.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

An intermediate cell which occurs in the deeper layers of the stratum spinosum or at an intermediate level of the normal cervical mucosa. These cells are adequately described in the literature. They are numerous when the surface layers of a mucosa contain cells whose differentiation is comparable to that normally observed in the cells of the lower levels of the superficial spinous layer.

PETER STOLL
Heidelberg, Germany

- A) Morphologically - polygonal cytoplasm, vesicular nucleus
- B) Cytometrically - $\frac{\text{nucleus}}{\text{cytoplasm}} = \frac{1}{10}$ $\frac{(\text{mean nuclear diameter})}{(\text{mean cellular diameter})}$
- C) Cytochemically - glycogen - positive
methyl green-pyronin - no true basophilia
fat - large granules in cytoplasm
alkaline phosphatase - negative
Cusmano reaction - cytoplasm is not completely dissolved

Intermediate cells should have, in addition to a considerable amount of cytoplasm, a vesicular nucleus, regardless of staining reaction of the cytoplasm (fairly thick cells when they are seen from the side, not only from the surface: "beginnende Abplattung des Zelleibes"). I would agree with Dr. Ayre except the term "basophilic" (or "cyanophilic").

GUILLERMO TERZANO
Buenos Aires, Argentina

Intermediate cells are cells with transitional characteristics between parabasal and superficial types of cells. More mature and more differentiated than the cells derived from the deeper layers of the epithelium, they have a round, oval or elliptical shape. The cytoplasm is dense and stains green or violet. The presence or absence of vacuoles is not a special characteristic of this type of cell. The nuclei are smaller, but still show normal structural patterns. They can be located centrally or be pushed to one side by vacuoles.

In this group are included cells of the "navicular" type, with their characteristic shapes. Cells of this type have a thick cellular membrane. The cytoplasm is dense. The presence of vacuoles pushing the cytoplasm toward the edge of the cell is frequently found. The nuclei are usually eccentric and are the size of a nucleus of a cell of normal intermediate type, or slightly larger. Navicular cells are often shed in groups or clusters, and are more numerous during the luteal phase of the cycle and in the smears of pregnant women.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

A polygonal squamous epithelial cell which is no longer round or oval is the basal or parabasal cell, and which contains a vesicular nucleus which is relatively small in relation to the amount of cytoplasm. Intermediate cells may stain eosinophilic or cyanophilic, but the majority will stain cyanophilic. The intermediate cell can be differentiated from the superficial cell by the lack of a pyknotic nucleus. I do not use the term "navicular cell." I agree with the definition of Dr. Pundel.

HANS KLAUS ZINSER
Cologne, Germany

Polygonal or navicular cell, usually staining blue. The nucleus is oval with a finely granulated interior structure.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE DEFINITION OF "INTERMEDIATE CELL"

64 "first preference" votes were cast in this division; the following preferences have been expressed:

Of the 64 "first preference" votes, a total of 40 votes were cast for terminologies suggested by Drs. Graham, Pundel, Terzano and Wied, which were essentially similar.

Of these definitions the one of Dr. Pundel received the highest vote, with 15 votes; the one of Dr. Terzano, 12 votes; the one of Dr. Wied, 7 votes; and the one of Dr. Graham, 6 votes.

CONCLUSION

According to this opinion poll, the following definition by J. Paul Pundel received the highest vote. Dr. Pundel's DEFINITION OF THE INTERMEDIATE CELL reads as follows:

"Squamous cell presenting a definite differentiation of the cytoplasm (glycogen), a beginning retraction of the nuclear diameter, but without complete karyopyknosis (nucleus larger than 6μ in diameter)."

DEFINITION OF A "SUPERFICIAL CELL"

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

The largest, most mature cell of the squamous epithelium exhibiting karyopyknosis. The outer cells are acidophilic or cornified while the inner may be basophilic, with a nucleus showing less pyknosis, commonly termed a "precornified" cell.

JEAN BERGER
Basel, Switzerland

Large, flat cell of polygonal form often showing a wrinkled border. The nucleus usually shows the signs of a beginning or a definite pyknosis.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

A large cell with squared-off sharp edges containing a completely pyknotic nucleus. It is usually eosinophilic but may be blue in color. It is distinguished from the intermediate by its pyknotic nucleus.

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

The term superficial cell may be used to describe cells of the squamous type derived from the superficial zone of the vagina or the ectocervix.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Squamous cell originating from a vaginal epithelium presenting a complete physiological differentiation in three basic layers. The criterion is: karyopyknosis (less than 6μ), while the cytoplasm may be cyanophilic or eosinophilic.

I would be in favor of adopting the following definition of a superficial cell: A LARGE CELL WITH SQUARED-OFF SHARP EDGES CONTAINING A COMPLETELY PYKNOTIC NUCLEUS. IT IS USUALLY EOSINOPHILIC, BUT MAY BE BLUE IN COLOR. IT IS DISTINGUISHED FROM THE INTERMEDIATE CELL BY ITS PYKNOTIC NUCLEUS.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U. S. A.

A cell arising from the superficial layers. These are squamous or flattened, tile-like, polygonal cells with small nuclei. The cytoplasm may be basophilic or acidophilic.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

A superficial cell is a cell which originates from the surface of stratified squamous mucosa.

As applied to the mucosa of the cervical or vaginal epithelium it usually implies a large, polygonal form with an acidophilic cytoplasm and a pyknotic nucleus.

The implication is that "superficial cell" refers to the surface cells of a normal mucosa; however, the surface cells observed in the follicular phase are not identical with those observed in the luteal phase. Thus the terminology in itself only indicates the layer of origin of a cell.

PETER STOLL
Heidelberg, Germany

- A) Morphologically: polygonal cytoplasm, small pyknotic nucleus (dark, no nuclear structure)
- B) Cytometrically: $\frac{\text{nucleus}}{\text{cytoplasm}} = \text{or } \frac{1}{10} \frac{(\text{mean nuclear diameter})}{(\text{mean cellular diameter})}$
- C) Cytochemically: glycogen - positive, but less than in intermediate cells
Cusmano reaction - cytoplasm is not dissolved
Fat - very large, coarse granules

I agree with Dr. Berger in that I feel that a superficial cell does not necessarily have to have complete karyopyknosis.

GUILLERMO TERZANO
Buenos Aires, Argentina

A superficial cell is a large, flat, polygonal cell with regular, folded or curled edges. The cytoplasm is transparent and stains light blue or light violet when the cells are derived from the deeper layers of the superficial zone, and stains pink when the cells belong to the most superficial layers. The nucleus is centrally located and is dark and pyknotic. It is smaller in size than a red blood cell. No nuclear structure can be recognized.

I agree with the following definition: A large cell with squared-off sharp edges containing a completely pyknotic nucleus. It is usually eosinophilic, but may be blue in color. It is distinguished from the intermediate cell by its pyknotic nucleus.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

A large, polygonal, squamous epithelial cell (from the vagina and ectocervix) which contains a pyknotic nucleus, regardless of the staining reaction of the cytoplasm. The superficial cell is distinguished from the "intermediate cell" by the presence of the pyknotic nucleus. The fact that the cells are more or less folded or crowded is irrelevant for differentiation. I agree completely with the definition of Drs. Graham, Pundel and Terzano.

HANS KLAUS ZINSER
Cologne, Germany

Polygonal cells (staining either blue or red) with pyknotic nucleus which is surrounded by a more or less prominent pale halo; these are from the external superficial layer.

Polygonal cells (staining either blue or red) with a more oval nucleus and finely granular nuclear structure: these are from the internal superficial layer.

COMMENTS OF PARTICIPANTS IN OPINION POLL WHICH DIFFERED FROM THOSE OF
TERMINOLOGY SUB-COMMITTEE ON CYTOLOGICAL DEFINITIONS

HANNS WERNER BOSCHANN
West-Berlin, Germany

My definition of a "superficial cell" is: 1) a large cell with squared-off, sharp edges, 2) its nucleus may be vesicular, prepyknotic or pyknotic, and 3) its cytoplasm may stain eosinophilic or cyanophilic.

The most mature superficial cells show an eosinophilic cytoplasm and a pyknotic nucleus and are flattened. Less mature types show a cyanophilic cytoplasm and a vesicular nucleus and are more or less folded. There are transitoral types, and in some cells, cyanophilia as well as eosinophilia is independent from the type of nucleus.

The superficial cell is distinguished from the "squame" by the presence of a nucleus, from the intermediate cell by the size and the squared-off shape of the cell. (Cytochemically, the superficial cell gives a positive periodic acid-Schiff reaction, even if pretreated with diastase, while the intermediate cell, after this pretreatment, shows a negative glycogen reaction.)

In my opinion, karyopyknosis is not a "conditio sine qua non" for a superficial cell. If the definite criterion would be the pyknotic nucleus, some intermediate cells (e.g. in pregnancy smears) would have to be interpreted as superficial cells, while cells with prepyknotic or vesicular nuclei (e.g. as they can be seen in smears from the late follicular phase of the menstrual cycle) would be interpreted as intermediate

cells, although they present the same cytoplasmic shape and size and sometimes staining qualities as the cells with pyknotic nuclei.

OLAF T. MESSELT
Oslo, Norway

A superficial cell is a large, polygonal cell with sharp edges. The cytoplasm usually stains eosinophilic, but may also stain cyanophilic. The nucleus is usually pyknotic but may be vesicular, round or oval.

To my mind, the significant difference between an intermediate cell and a superficial cell lies in the size and form of the cell more than in the appearance of the nucleus. In many, many smears from normally menstruating women one will find large, polygonal cells of the same size and shape, the only difference being that one cell has a rather small, but vesicular, round or oval nucleus; the other has a pyknotic one. To call the first one an "intermediate cell" and the latter a "superficial cell" is in my opinion an error, because they both derive from the same layer, viz. the superficial layer. The whole difference is that the one with the pyknotic nucleus is more mature than the other.

That it will prove difficult to request a pyknotic nucleus in a large, polygonal cell as a "conditio sine qua non" for calling the cell "superficial" is illustrated by referring to the Atlas of Papanicolaou, see A. I., especially No. 15, and to the terminologies from the members of the Terminology Sub-Committee applied to Figures 3 and 4 of the present Questionnaire.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE DEFINITION OF "SUPERFICIAL CELL"

61 "first preference" votes were cast in this division; the following preferences have been expressed:

Of the 61 "first preference" votes cast for terminologies suggested by the Members of the Terminology Sub-Committee, the terminologies of Drs. Graham, Pundel, Terzano and Wied, who stated identical definitions, obtained 37 votes. Of these definitions, the one of Dr. Pundel received the highest vote with 13 votes; the one of Dr. Wied, 9 votes; the one of Dr. Terzano, 8 votes; and the one of Dr. Graham, 7 votes.

CONCLUSION

According to this opinion poll the following definition by Graham, Pundel, Terzano and Wied received the majority vote (37 out of 61): Their definition of the SUPERFICIAL CELL reads as follows:

"A large cell with squared-off sharp edges containing a completely pyknotic nucleus. It is usually eosinophilic, but may be blue in color. It is distinguished from the intermediate cell by its pyknotic nucleus."

DEFINITION No. IX

DEFINITIONS OF "CYTOLYSIS" AND "AUTOLYSIS"

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE

J. ERNEST AYRE
Miami, Florida, U.S.A.

Cytolysis refers to the complete destruction of the cytoplasm, leaving what we have termed the "naked nucleus."

Autolysis signifies autodigestion or a break-up of the cell as a result of some enzymatic change arising within the cell.

JEAN BERGER
Basel, Switzerland

CYTOLYSIS: Disappearance of all cytoplasm due to an increase of glycogen and of the Döderlein bacillus. Very often we can only observe naked nuclei.

AUTOLYSIS: Disappearance and degeneration phenomenon of the whole cell due to the presence of other bacilli (pathological mixed flora).

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Cytolysis is a cellular picture where free benign nuclei predominate. I use the term exclusively for lysis of squamous cells. Nuclei of columnar cells occur so frequently as free nuclei that it seems to me incorrect to apply the term cytolysis to that picture. I do not use the term autolysis.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

A good definition may be found in standard text books.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Cytolysis: destruction of the cytoplasm associated with a marked development of Döderlein bacilli. Basic example: the vaginal smear in pregnancy. Criteria: (a) nuclei only of one type (intermediate cells), (b) pure or predominant growth of Döderlein bacilli, (c) marked acidosis of the vaginal content (<4.2 pH).

Autolysis: destruction of the cytoplasm by inflammation, or other destructive or degenerative causes: (a) no definite cell type, (b) marked vaginal flow, (c) high vaginal pH (>4.5).

I would like to repeat that this is an important question which should not be considered from a purely linguistic or etymological point of view, but from a practical one, that every cytologist should understand from the term cytolysis exactly the same phenomenon and not any other one. It seems to me that important papers of Wied and Christiansen (Geburtshilfe und Frauenheilkunde 13:986-995, 1953 and Zbl. Bakt. Paras. Infekt. und Hyg. 160:413-423, 1953) which were confirmed by Pundel and Ost (Bull. Soc. R. Belge de Gyn. et Obst. 24: 489, 1954) have been ignored by many discussants.

I believe that it would be helpful for interpretation if the cytologists would make a distinction between the two types of such cellular changes: (a) cytolysis, as the disintegration of the squamous cells, usually intermediate cells, caused by Döderlein bacilli, and (b) autolysis, the disintegration of squamous cells, usually parabasal cells, unrelated to the effect of Döderlein bacilli.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U. S. A.

Cytolysis: dissolution of a cell, usually by external factors.

Autolysis: disintegration of a cell from endogenous factors.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

These terms indicate one and the same basic process. There is some justification for arbitrarily using cytolysis to indicate disintegration of the cytoplasm believed to be due to the action of the Döderlein bacillus. Autolysis might be applied to dissolution of the cytoplasm caused by other means.

PETER STOLL
Heidelberg, Germany

Cytolysis is a special form of autolysis.

In our definition we follow the suggestions of Wied and Pundel (Döderlein flora).

GUILLERMO TERZANO
Buenos Aires, Argentina

Concerning the definitions of "cytolysis" and "autolysis," I am in agreement with Pundel, Stoll and Wied.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Although "cytolysis" and "autolysis" indicate, as far as the meaning of the words is concerned, a similar process, I prefer the name "autolysis" to express lysis of parabasal cells, which is often observed in smears of the atrophic type. By the term "autolysis" I imply that there is lysis of parabasal cells which is not caused by Döderlein bacilli. On the other hand, I use the term "cytolysis" to express lysis of intermediate cells always associated with the presence of Döderlein bacilli, and which is immediately inhibited if the growth of the *Bacillus vaginalis* Döderlein is inhibited. CYTOLYSIS due to *Bacillus vaginalis* Döderlein is often increased by parenteral administration of estrogens, especially in the postmenopausal years, or in castrates, whereas AUTOLYSIS is not influenced by local bacteriostatic treatment, but immediately inhibited by local or parenteral administration of estrogens.

I do not apply the terms AUTOLYSIS or CYTOLYSIS to glandular cells. I prefer to describe free nuclei of cells from the glandular epithelium as STRIPPED NUCLEI, rather than use the above terms. This difference in terminology for cell destruction is useful for immediate identification in routine laboratory work.

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HANS KLAUS ZINSER
Cologne, Germany

By CYTOLYSIS I understand lysis of cytoplasm by *Bacillus vaginalis* Döderlein. There are many free nuclei in evidence in addition to the cellular debris and markedly increased Döderlein flora.

By AUTOLYSIS I understand lysis of necrotic cells (usually cells from deep layers and poorly differentiated or undifferentiated cells).

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON THE DEFINITIONS OF "CYTOLYSIS" AND "AUTOLYSIS"

61 "first preference" votes were cast in this division; the following preferences have been expressed:

38 of these 61 votes were cast for the definitions of Drs. Pundel, Stoll, Terzano and Wied, who stated that they agree with each other. Of these 38 votes, 15 were cast for the definition by Dr. Pundel, 11 for the one by Dr. Wied, 7 for the one by Dr. Stoll, and 5 for one by Dr. Terzano.

CONCLUSION

According to the opinion poll the following definition by Pundel received the highest vote (15) and is supported by a total of 38 votes of 61 cast in this division. The definitions of CYTOLYSIS and AUTOLYSIS read as follows:

"CYTOLYSIS: Destruction of the cytoplasm associated with a marked development of Döderlein bacilli. Basic example: the vaginal smear in pregnancy. Criteria: (a) nuclei only of one type (intermediate cells), (b) pure or predominant growth of Döderlein bacilli, (c) marked acidosis of the vaginal content (<4.2 pH)."

"AUTOLYSIS: Destruction of the cytoplasm by inflammation, or other destructive or degenerative causes: (a) no definite cell type, (b) marked vaginal flow, (c) high vaginal pH (>4.5)."

DEFINITION No. X

DEFINITION OF A "KERATINIZED CELL"

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

The most mature cell of the squamous epithelium. It is a superficial cell, acidophilic and cornified, with fading or absent nucleus. We have preferred to refer to such a cell as a HYPERCORNIFIED CELL.

JEAN BERGER
Basel, Switzerland

Oval cell form showing intercellular bridges, not infrequently the shape of a spindle cell. The nucleus is a bit elongated and shows a perinuclear halo.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

A keratinized cell is a superficial cell which has no visible nucleus. The cytoplasm usually stains orange, but may on occasion be pink. I suggest the following alternative term: ANUCLEATED SQUAMOUS CELL.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

The term "keratinized cell" may be applied to a cell the cytoplasm of which consists of keratin. I feel that a distinction should be made between a keratinized and a cornified cell since each variety represents a different cytochemical process. Furthermore, each of the two types has a different staining reaction.

J. PAUL PUNDEL
Luxembourg, Luxembourg

A squamous cell in which keratin can be demonstrated by specific cytochemical reactions. In general such a keratinized cell appears only in abnormal conditions. The typical, completely keratinized cell is a superficial cell with loss of its nucleus ("Schuppe," Hornzelle, anucleate squame).

Please refer to the comments made previously under Definition No. I: Cornified Cell, concerning the subject of the keratinized cell.

In place of the term "keratinized cell" I feel we should substitute the term ANUCLEATE SQUAME, since this terminology is morphologically descriptive and not based upon facts which have to be backed up by investigative techniques other than the Papanicolaou technique.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U.S.A.

A markedly flattened squamous cell in which the nucleus has usually disappeared; the cytoplasm is strongly orangeophilic.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

I suggest the following alternative term: ANUCLEATE SQUAME.

The term denotes a cell which originates in a keratin layer. The cell in question is an anucleate cell with red, orange or yellow cytoplasm. There are many abnormal processes in the cervix or vagina which are characterized by the presence of keratin. The presence of anucleate squames in itself does not necessarily imply prolapse or leukoplakia.

PETER STOLL
Heidelberg, Germany

This term is scientifically incorrect when referring to cells in gynecological cytology. Keratin is found only in hair, wool and nails. The process of keratinization should be the subject of further investigation (cytochemistry).

For routine cytology I completely agree with Wied. Alternative term: ANUCLEATE SQUAME.

GUILLERMO TERZANO
Buenos Aires, Argentina

Keratinized cells are the type of cells found in smears of women with uterine prolapse, hyperkeratosis, etc. They are cells which have lost their vitality and are dead cells. They do not have nuclei, but cytoplasm containing keratin, which takes up the Orange G stain strongly. In smears keratinized cells appear polygonal or elliptical with regular or folded edges.

I suggest that the term KERATINIZED CELL be MAINTAINED to indicate a cell which has been proven by cytological methods (other than the Papanicolaou technique) to contain keratin.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

The terms "keratinized cell" and "cornified cell" are by strict definition one and the same thing. Since many authors use the two terms to express different cells, there is confusion. I would suggest abandoning both terms completely, especially since both terms relate to cytochemical information for which the routine Papanicolaou staining method is not specific enough.

I suggest that the so-called "keratinized cell" be called an ANUCLEATE SQUAME. This terminology one can justify easily because it is based on what one SEES and not what one ASSUMES to be the cytochemical quality of the cell.

HANS KLAUS ZINSER
Cologne, Germany

Keratinized cells are cells which show marked intercellular bridges, thus giving a dendriform impression.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON "KERATINIZED CELLS"

71 "first preference" votes were cast in this division; the following preferences have been expressed:

59 out of 71 votes were cast for definitions which replaced the term "keratinized cell" with either ANUCLEATE SQUAME (49) or ANUCLEATED SQUAMOUS CELL (10). The highest individual vote was cast for the definition by Dr. Wied (18).

2 of the 71 votes were cast in favor of HYPERCORNIFIED CELL as alternative terminology.

10 of the 71 votes were cast to maintain the term KERATINIZED CELL, as defined. Among this group the highest vote (4) has been cast for the definition of Dr. Rakoff.

CONCLUSION

According to this opinion poll the definitions of Drs. Graham, Pundel, Reagan, Stoll and Wied received the majority (59 of 71). They stated that they prefer that the term "keratinized cell" be REPLACED BY the term ANUCLEATE SQUAME (49) or ANUCLEATED SQUAMOUS CELL (10).

DEFINITION No. XI

DEFINITIONS AND TERMINOLOGY OF THE MAIN CYTO-HORMONAL PATTERNS

DEFINITIONS BY THE MEMBERS OF THE TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

NO COMMENT.

JEAN BERGER
Basel, Switzerland

NO COMMENT.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

- (1) Marked estrin effect - over 70% of the squamous cells are superficial.
- (2) Moderate estrin effect - 20-70% of the squamous cells are superficial.
- (3) Slight estrin effect - below 20% of the squamous cells are superficial; remainder intermediate.
- (4) Very little estrin effect - all intermediate.
- (5) Atrophic - intermediate and basal cells.
- (6) Complete atrophy - all basal cells.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

NO COMMENT.

J. PAUL PUNDEL
Luxembourg, Luxembourg

This problem is too large and too important to be considered as a resume.

For every hormonal diagnosis by vaginal smears, the following steps are to be considered:

(1) The wall of the vagina from which the smear has been taken. Only smears from the lateral wall of one fornix should be accepted for hormonal diagnosis. This part must be mentioned in the questionnaire sent to the laboratory with the smear.

(2) The examination of the stained smear:

- a) General morphological examination and evaluation: cell types present, type of the shedding, single cells or clusters, flat or folded cells; cell alterations; Karyopyknotic Index and Eosinophilic Index; absence or presence of trichomonas (to avoid diagnostic errors); other findings.
- b) The hormonal evaluation from this cell picture.

(3) The final diagnosis:

This is the result of the comparison of the general hormonal evaluation of the examined smear with the clinical data given for the smear. Thus, a moderate estrin effect, or purely estrogenic cells (no clusters, only single, flat cells) with a K.I. of 50% and an E.I. of 38% would give the following diagnoses:

- a) smear taken on the 10th day of a 28-day cycle; normal estrogenic stimulation for the day of cycle examined.

- b) smear taken at the 14th day of a 28-day cycle; insufficient stimulation of estrogen for a normal 14th day.
- c) smear taken on 23rd day of a cycle; moderate estrogenic stimulation, no progesteronic activity. Anovulatory cycle probable, but for a precise diagnosis, a series of repeated smears of the cycle should be considered.
- d) smear taken in a woman 70 years old; abnormally high estrogenic stimulation for a woman 30 years after the menopause.
- e) smear taken at the 5th month of pregnancy. Abnormal pregnancy smear. Manifest hormonal dysfunction.

ABRAHAM E. RAKOFF
Philadelphia, Pennsylvania, U. S. A.

- (1) Marked estrogen deficiency: basal or parabasal cells only.
- (2) Moderate estrogen deficiency: parabasal and intermediate cells.
- (3) Slight estrogen deficiency: chiefly intermediate and superficial cells, occ. parabasal cells.
- (4) Slight estrogen effect: superficial cells with less than 20% eosinophilic.
- (5) Moderate estrogen effect: superficial cells with 20-40% eosinophilic.
- (6) Marked estrogen effect: superficial cells with 40% eosinophilic and with pyknotic nuclei.
- (7) Slight regression: beginning folding of squamous cells.
- (8) Moderate regression: many of the cells show marked folding and twisting.
- (9) Marked regression: folding and twisting of most of the cells with cytolysis of many.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

There should be a wide difference in opinion as to what constitutes the "main hormonal patterns." A given cytological picture may be evaluated quite differently under different conditions. Generalizations in this respect tend to be misleading and much more is gained in evaluating cellular changes under given conditions.

In general, it would seem desirable to record a differential count or the basis for making the evaluation and then interpreting this for the physician.

I do not believe that a hormonal evaluation should necessarily be expressed only in degrees of estrogenic effect. I believe that the evidence should be cited and recorded preferably by means of a differential count and then interpreted in view of the clinical information.

PETER STOLL
Heidelberg, Germany

- (1) Very highly proliferated: 90-100% superficial cells (90% acidophilia).
- (2) Highly proliferated: 70-80% superficial cells (50% acidophilia).
- (3) Intermediate proliferation with tendency towards high proliferation: up to 50% superficial cells (up to 50% acidophilia); the other cells are intermediate cells.
- (4) Intermediate proliferation: up to 20% superficial cells; 70-80% intermediate cells; up to 10% basal-parabasal cells (less than 50% acidophilia).
- (5) Intermediate proliferation with tendency towards atrophy: 50-80% intermediate cells; less than 10% superficial cells; 50% and over, basal-parabasal cells (less than 10% acidophilia).
- (6) Non-proliferated (atrophy): more than 70% basal-parabasal cells (less than 10% acidophilia).

We give only a cytohormonal evaluation in connection with the clinical information concerning menstrual cycle, hormonal therapy, etc. We say then only: "compatible" or "incompatible" with the clinical information.

In regard to main hormonal patterns, I would agree to a MORPHOLOGICAL DESCRIPTION of the smear with comments whether or not the smear findings are COMPATIBLE WITH THE GIVEN CLINICAL INFORMATION.

GUILLERMO TERZANO
Buenos Aires, Argentina

- (1) Eutrophic vaginal smears: Superficial karyopyknotic cells (eosinophilic and non-eosinophilic) and intermediate cells, in different proportions according to the phase of the cycle. Parabasal and deep; intermediate type cells are never present.
- (2) Hypotrophic vaginal smears: (Low estrogenic level): Prevalence of cells of intermediate type and of superficial karyopyknotic cells. Eosinophilic cells are absent and a few parabasal cells are seen in smears.
- (3) Atrophic vaginal smears: (lack of estrogens): Intermediate and parabasal cells. Large amount of leukocytes and mucus.

(4) Normal cycle:

- a) Menstrual phase: red blood cells, superficial and intermediate cells, endometrial cells.
 - b) Follicular phase: large, well differentiated cells of the superficial and intermediate types; daily increase of the superficial karyopyknotic eosinophilic cells.
 - c) Ovulation peak: clean smears; prevalence of superficial karyopyknotic cells, most of them eosinophilic, polygonal, with regular outlines.
 - d) Post ovulation stage: desquamation in groups or sheets; folding and curling of the edges of the cells.
 - e) Luteal phase: regressive changes; irregular forms of the cells; elongated cells; navicular cells.
 - f) Premenstrual phase: a slight increase of the superficial karyopyknotic cells.
- (5) Pregnancy: Few eosinophilic cells; prevalence of the intermediate type cells; many cells of the navicular type in large groups.
- (6) Estrogenic therapy: The pattern according to the treatment; smears as during the follicular phase of the normal cycle.
- (7) Progesterone therapy: Smears as during the luteal phase; slight proliferation when administered to women with atrophic smears.
- (8) Androgenic therapy: Regressive changes (in normally menstruating women) or proliferative changes (in women with atrophic smears); large cells (parabasal or intermediate type) with cytoplasm lighter than usual and a pale, enlarged nucleus. Eosinophilic cells are not seen.

THE READING OF SMEARS SHOULD BE MORPHOLOGICALLY DESCRIPTIVE WITH ANY ADDITIONAL INFORMATION EXPRESSING THE DEGREES OF HORMONAL (ESTROGEN, PROGESTERONE, TESTOSTERONE) EFFECT.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

For all routine cases I feel that one can recognize only two absolutely diagnostic hormonal patterns: (1) the highly proliferated cell type, consisting of a high percentage of superficial cells, which is always caused by estrogen stimulation and no other influence, and (2) the atrophic type, consisting of parabasal cells which is always indicative of lack of proliferative sex steroid stimulation of the vaginal epithelium. All other intermediate cell types may be due to a variety of causes, certainly not only to various degrees of estrogen stimulation and are of relative diagnostic value only if full clinical information is supplied. I also feel that the Karyopyknotic Index is not an absolute measurement of estrogen stimulation. It seems to me that one should give only a morphological description of what one sees in the smears (cell types, cytolysis, leukocytes, etc.) and state as a conclusion only (a) THE CYTOLOGICAL FINDINGS ARE COMPATIBLE WITH AGE AND MENSTRUAL HISTORY, or (b) THE FINDINGS ARE INCOMPATIBLE WITH AGE AND MENSTRUAL HISTORY. In the latter case we explain as far as possible why the findings seem to be incompatible.

I agree with Pundel that this particular problem would deserve a more extensive discussion, however.

HANS KLAUS ZINSER
Cologne, Germany

NO COMMENT.

COMMENTS OF THE PARTICIPANTS IN THE OPINION POLL WHICH DIFFERED FROM
THOSE OF THE TERMINOLOGY SUB-COMMITTEE ON CYTOLOGICAL DEFINITIONS

JULIETA C. de LAGUNA
Mexico, D. F., Mexico

The cytological picture does not allow one to establish accurate quantifications of estrogen activity, but classifications and correlations now in use are not suitable for the needs of functional cytology.

We have taken into consideration all the functional cells: superficial karyopyknotic cells, cells with vesicular nuclei and intermediate cells, and we have given a numerical value to each type. The basis of this is as follows: prevalent percentage of the different cellular types during ovulatory and premenstrual stages; the increase of basal types over the superficial types during hypo-estrogenism and menopause; intermediate cells are in between; average variations of estrogen levels during cycle go from 60 to 30 I. U. from ovulatory to menstrual phase. If we accept as the maximum estrogen effect that picture seen in the ovulatory phase, and those higher, cytologically pictured by 100% "cornified" cells

(90 ± 10), a 100% of intermediate cells ($+10$) corresponds to 50% of maximal estrogen effect, and a 100% of superficial cells with vesicular nuclei ("precornified") corresponds to 60% of estrogen effect.

So we give a value of 1.0 to the "cornified," of 0.6 to the "precornified" cell and 0.5 to the intermediate. The estrogenic value (E. V.) is obtained through the addition of the percentage of "cornified" cells plus the percentage of "precornified" cells times 0.6 and the percentage of intermediate cells times 0.5. Basal cells being non-functional have 0 value. This empirical value of E. V. shows a high degree of cyto-clinical correlation. We are waiting for the estrogen determinations for the final assessment of its applicability.

During the cycle, the E. V. goes from 60 to 85. In estrogen insufficiency it is below 50. Nevertheless, it is of utmost importance to take into consideration the clinical picture as a whole (as Pundel states) in order to speak about hyper- or hypoestrogenism, etc.

VIOLETTE M. NUOVO
Paris, France

This is too large a subject to be treated in a few words. I do not agree with any of the descriptions.

RESULTS OF THE OPINION POLL AMONG 31 CYTOLOGISTS ON CYTO-HORMONAL PATTERNS

35 "first preference" votes were cast in this division; of these 35 votes, 7 were cast for Members of the Terminology Sub-Committee who gave "no comment." Of the remaining 28 votes, the following preferences were expressed:

8 votes - J. Paul Pundel
8 votes - George L. Wied
4 votes - Guillermo Terzano
3 votes - Peter Stoll
2 votes - Abraham E. Rakoff
2 votes - James W. Reagan
1 vote - Ruth M. Graham

CONCLUSION

The highest number of votes (8 each) were cast for the definitions of Drs. Pundel and Wied, who stated in addition to their definitions and comments that it is not possible to discuss this important matter sufficiently in such a brief manner. The opinion poll seems inconclusive in this division.

(The Members of the Editorial Board suggested that a special symposium be held on this particular subject - Ed.)

OPINION POLL ON CYTOLOGICAL TERMINOLOGY

INTRODUCTION

In an attempt to obtain some uniformity in cytological terminology, 24 photomicrographs together with drawings of these cells were submitted to the Members of the Terminology Sub-Committee of the International Academy of Gynecological Cytology. The following Sub-Committee Members have contributed their terminologies for the cells depicted in the 24 photomicrographs:

J. Ernest Ayre, Miami, Florida, U. S. A.
 Jean Berger, Basel, Switzerland.
 Ruth M. Graham, Buffalo, New York, U. S. A.
 George N. Papanicolaou, New York, New York, U. S. A.
 J. Paul Pundel, Luxembourg, Luxembourg.
 James W. Reagan, Cleveland, Ohio, U. S. A.
 Peter Stoll, Heidelberg, Germany.
 George Terzano, Buenos Aires, Argentina.
 George L. Wied, Chicago, Illinois, U. S. A.
 Hans Klaus Zinser, Cologne, Germany.

The terminologies of the above group were submitted for an opinion poll to the Members of the International Academy of Gynecological Cytology and several of its Candidates for Membership, after the

BALLOT ON PHOTOMICROGRAPHS

	Code No.A.	Code No.B.	Code No.C.	Code No.D.	Code No.E.	Code No.F.	Code No.G.	Code No.H.	Code No.I.	Code No.J.	I do not agree with any of the proposed terminologies & add my own terminology on a separate sheet.
Fig. 1											
Fig. 2											
Fig. 3											
Fig. 4											
Fig. 5											
Fig. 6											
Fig. 7											
Fig. 8											
Fig. 9											
Fig. 10											
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Fig. 16											
Fig. 17											
Fig. 18											
Fig. 19											
Fig. 20											
Fig. 21											
Fig. 22											
Fig. 23											
Fig. 24											

To indicate your terminology of choice, place a "1" in the proper box. In case more than one code uses the same terminology place "1" in all such boxes, if you wish (do not use "yes," "no" or "X"). You may also write in the numbers "2" to "10" in order to show your preference of the other terminologies. If you do not agree with any of the proposed terminologies indicate this in the space provided and add your own terminology on a separate sheet.

names of the Sub-Committee Members had been replaced by codes. The following ballot was submitted to the Members and Candidates:

The following individuals have contributed to the opinion poll:

1. Anthony F. Anderson, Edinburgh, Scotland, U. K.
2. J. Ernest Ayre, Miami, Florida, U. S. A.
3. Jean Berger, Basel, Switzerland.
4. Hanns-Werner Boschann, West-Berlin, Germany.
5. Jean de Brux, Paris, France.
6. Jacques Ferin, Louvain, Belgium.
7. Clarice do Amaral Ferreira, Rio de Janeiro, Brazil.
8. Herbert K. Fidler, Vancouver, British Columbia, Canada.
9. Alvan G. Foraker, Jacksonville, Florida, U. S. A.
10. Manuel Galbis, Valencia, Spain.
11. Marcel Gaudetroy, Lille, Nord, France.
12. Ruth M. Graham, Buffalo, New York, U. S. A.
13. Emmerich von Haam, Columbus, Ohio, U. S. A.
14. Pierre Haour, Lyon, Rhone, France.
15. F. A. Iklé, St. Gallen, Switzerland.
16. Olle Kjellgren, Goteborg, Sweden.
17. Julieta Calderon de Laguna, Mexico, D. F., Mexico.
18. Olaf Messelt, Oslo, Norway.
19. Luis Montalvo Ruiz, Madrid, Spain.
20. Junji Mizuno, Nagoya, Japan.
21. Violette M. Nuovo, Paris, France.
22. George N. Papanicolaou, New York, New York, U. S. A.
23. J. Paul Pundel, Luxembourg, Luxembourg.
24. James W. Reagan, Cleveland, Ohio, U. S. A.
25. Edmund Schüller, Vienna, Austria.
26. Horst Smolka, Kiel, Germany.
27. Peter Stoll, Heidelberg, Germany.
28. Guillermo Terzano, Buenos Aires, Argentina.
29. Erica Wachtel, London, England, U. K.
30. George L. Wied, Chicago, Illinois, U. S. A.
31. Hans Klaus Zinser, Cologne, Germany.

Of the above contributors, Dr. Julieta Calderon de Laguna of Mexico, D. F., Mexico, submitted only comments, but no ballot. The ballots are a permanent record of the Editorial Office and may be inspected in this office.

The ballots were counted and evaluated. The evaluation is presented after each figure. The lower preference votes are not shown at this time; only the number of "first preference" votes is shown.

Discussions of these terminologies and comments on the opinion poll are invited from the readers of ACTA CYTOLOGICA and will be published as "Letters to the Editor."

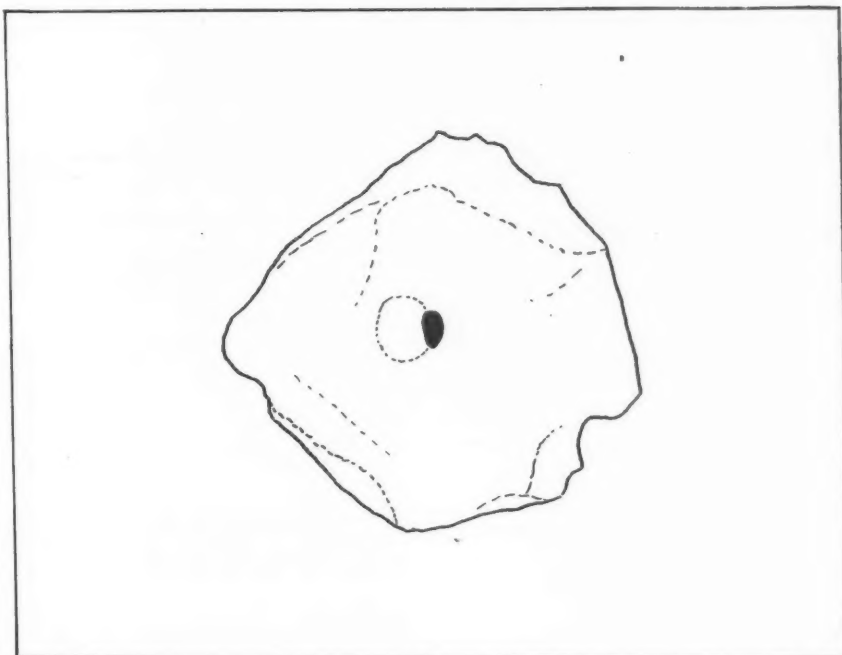
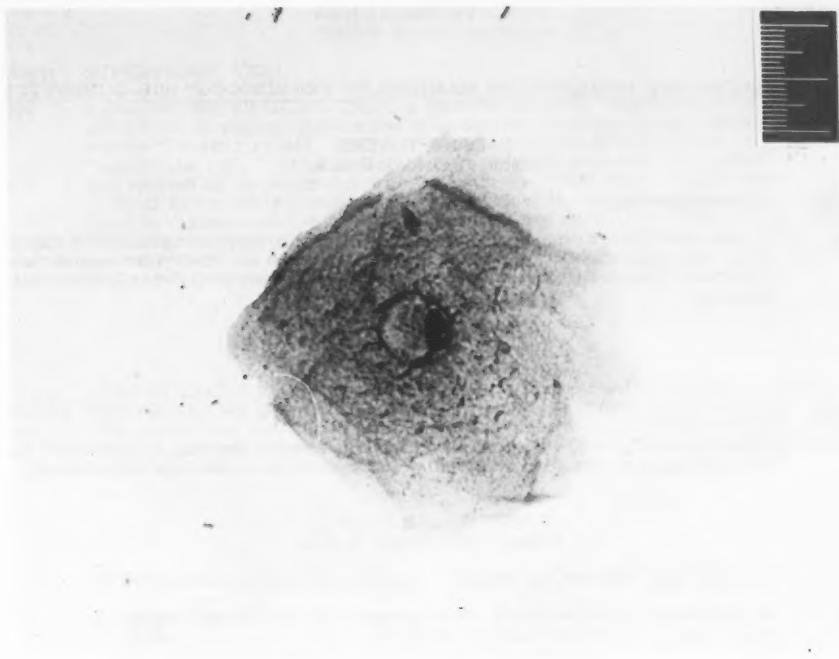


FIG. 1.—Vaginal smear of a 22 year old woman. L.M.P. 14 days ago. Normal gynecological findings. (20μ scale imprinted.)

Suggested Terminology by Preference of the Majority: SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS.

FIGURE 1.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

Terminology: CORNIFIED CELL

Comments: This is not a true perinuclear halo which is a specific morphological entity characteristic of the "Pre-cancer Cell-Complex." I would adhere to the established nomenclature as "cornified" if the cell shows acidophilic, or "pre-cornified" if the cell shows basophilic staining.

JEAN BERGER
Basel, Switzerland

Terminology: SUPERFICIAL CELL of squamous epithelium, showing INFLAMMATORY CHANGES

Comments: Folded superficial cell with pyknotic, eccentric nucleus showing a perinuclear halo. This cell is not to be called a "cornified cell" since the nucleus is still present.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

Terminology: SUPERFICIAL SQUAMOUS CELL

Comments: I do not think it is necessary to say "squamous epithelial" since by the use of the word "squamous," "epithelial" is understood.

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

Terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with a pyknotic nucleus.

Comments: The perinuclear halo indicates the original size of the nucleus. Since I make a distinction between cornified and keratinized cells, I would call this cell "cornified" if it were stained pink with my standard smear stain.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: SUPERFICIAL SQUAMOUS CELL

Comments: I agree with the comments of Wied. This superficial cell shows a feature that is not encountered in every superficial cell: the juxtannuclear halo which I would call a juxtannuclear vacuole.

Peri- or juxtannuclear vacuoles should not be confused with the perinuclear halos appearing in the vaginal cells in Trichomonas infestations.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: SUPERFICIAL SQUAMOUS CELL

Comments: This polygonal cell is derived from the surface of a stratified squamous mucosa. This cell is often designated as a cornified cell although the cytoplasm does not contain horny material as is observed in the superficial cell of a keratinizing epithelium. A perinuclear clear zone surrounds the pyknotic nucleus. The latter is indicative of impending cell death due to senescence.

PETER STOLL
Heidelberg, Germany

Terminology: SUPERFICIAL (SQUAMOUS EPITHELIAL) CELL

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: SUPERFICIAL CELL

Comments: I consider SUPERFICIAL CELL a good enough term. Since it is understood that all the cells found in vaginal smears are cells derived from the vaginal epithelium, it would be easier to write a report, if we vote affirmatively for denominations as simple as: "superficial cell," "intermediate cell" and "parabasal cell" (according to the terminology adopted by the Academy) with the tacit agreement that it implied superficial, intermediate and parabasal cells of the epithelium of the vaginal mucosa. Superficial cells must be distinguished as eosinophilic or as cyanophilic, according to their tinctorial affinities, in smears stained with Papanicolaou's or Shorr's technique. I do not see any reason to call this cell "cornified," especially since this term is considered incorrect. The retracted pyknotic nucleus is the reason to call this cell "superficial."

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: SUPERFICIAL SQUAMOUS CELL exhibiting a characteristic pyknotic nucleus.

Comments: The perinuclear halo shows size of nucleus prior to pyknotic degeneration. I believe the term "cornified," frequently applied to such cells is incorrect since the normal superficial squamous cell contains no horn.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: SUPERFICIAL CELL with pyknotic nucleus

Comments: The term "cornified" may be incorrect. However, it is a generally used term. One might substitute the term "differentiated" or "mature." In my opinion, one deals here with a precursor stage of the SQUAME ("Schuppe").

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 1

79 "first preference" votes were cast for the terminologies of Figure 1; the following preferences were expressed:

77 of the 79 "first preference" votes were cast for terminologies by Members of the Terminology Sub-Committee which indicated that the depicted cell should be called a SUPERFICIAL, SUPERFICIAL SQUAMOUS, or SUPERFICIAL SQUAMOUS EPITHELIAL CELL.

1 "first preference" vote was cast for the terminology CORNIFIED CELL.

1 "first preference" vote was cast for the terminology SUPERFICIAL CELL of the squamous epithelium, showing INFLAMMATORY CHANGES.

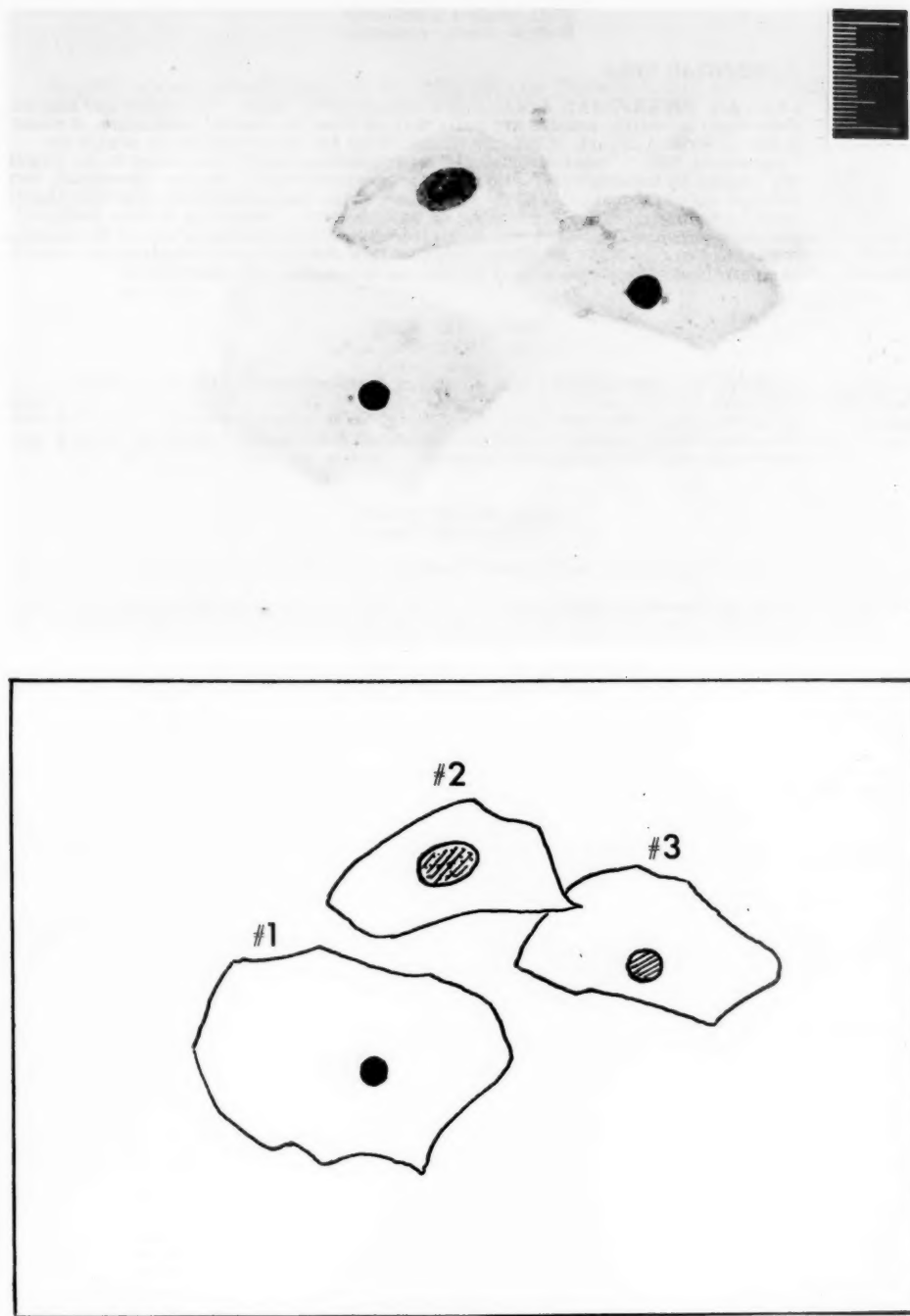


FIG. 2.—Vaginal smear of a 38 year old woman. L.M.P. 8 days ago. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: Cell #1: SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELL; cells #2 and #3: INTERMEDIATE (SQUAMOUS) CELLS.

FIGURE 2.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: Cell #1: CORNIFIED CELL (because of common usage)
Cells #2 and #3: INTERMEDIATE CELLS

Comments: #2 shows vesicular nucleus and is less mature than #3.

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cells #2 and #3: INTERMEDIATE CELLS

Comments: I agree to call cells #2 and #3 intermediate but I would add "with polychromasia."

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cells #2 and #3: INTERMEDIATE SQUAMOUS CELLS

Comments: Cell #2: The classification of this cell is determined by whether one considers shape or nuclear size plus cytoplasmic-nuclear ratio as critical. I consider shape as critical and since one edge is sharp and square, I regard this cell as an intermediate rather than an outer layer basal.

I do not agree with the term "parabasal." It indicates that the cells are "near the basal" and seems to me a weak term. I would greatly prefer that the squamous cells be considered to have three types:

- 1) Superficial squamous cells;
- 2) Intermediate squamous cells;
- 3) Basal cells:
 - a) Outer layer basal cells,
 - b) Inner layer basal cells,
 - c) Immature basal cells.

Since the basal cells vary so widely in the amount of cytoplasm present it seems necessary to subdivide them. The use of the terms inner layer and outer layer would be more accurate than the use of the word "mature" in #19. Actually, the mature cells of the squamous epithelium are the superficial squamous cells. It is confusing. I believe we should call the cells much lower in the epithelium "mature."

The use of the term "immature basal cell" for the cells near the basement membrane, which rarely desquamate, appears to me to be logical since they represent the most immature, benign squamous cells.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with a pyknotic nucleus
Cell #2: SQUAMOUS EPITHELIAL CELL probably derived from the INTERMEDIATE zone with a vesicular nucleus
Cell #3: SQUAMOUS EPITHELIAL CELL probably derived from the SUPERFICIAL zone with partly pyknotic nucleus

Comments: Since the OG-EA staining procedure is widely used, it appears to be necessary to make a distinction between cells showing preference for the light green stain and those exhibiting greater affinity to either Eosin or Orange G. Keratinized cells, as seen in keratosis or leukoplakia, which contain keratohyaline, have a preference for Orange G. Cornified cells containing Eleidin show greater affinity for Eosin while other less degenerated and less differentiated cells stain greenish-blue. There is no doubt that these different staining reactions represent basic cytochemical differences which should not be ignored.

Additional Comments (received after the opinion poll):

Any attempt to revise the terminology of the exfoliative cytology of the vagina and the ectocervix should be based on a consideration of the histology of the epithelial lining of these organs.

As a result of extensive studies on the vaginal and ectocervical epithelium, there is, I believe, general agreement that it is made up of four distinct zones:

1. The basal zone consists of a single layer of undifferentiated cells. It is understood that cells of this type are not normally seen in smears.
2. There is a zone adjacent to the basal, consisting of several layers of ovoid cells which grow larger as they move toward the surface, and, under normal conditions, contain glycogen. This is the zone which I designated as parabasal. Whether this term is inappropriate or not, does not deny the existence of this zone.
3. As the cells move toward the surface, they become elongated and flattened and assume the form which I call navicular. These cells also contain much glycogen and form a very distinct zone -- the intermediate or navicular.
4. Beyond this zone the cells undergo a progressive cornification or keratinization, thus forming a protective coat which represents a very useful adaptation. In this last zone the nuclei of the cells undergo a progressive pyknosis. It should, however, be understood that not all of the cells which belong to this zone have a small and typically pyknotic nucleus. Pyknosis depends to a large extent on the estrogenic action and therefore on the functional state of the epithelium. In a menopausal woman the cells of the superficial zone may have a relatively large nucleus which may be called vesicular, although the term is used by many histologists to designate a more specific nuclear type. It is for this reason that I cannot possibly agree with the characterization of every cell that has not a pyknotic nucleus as intermediate.

With regard to the terms "cornification" and "keratinization," my views are expressed briefly in the above Comments on Figure 2. The term "squames" does not seem to me appropriate.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cells #2 and #3: INTERMEDIATE SQUAMOUS CELLS

Comments: I support completely the comments of Wied. For practical purposes I adopted the same classification into these three basic cell types.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cells #2 and #3: INTERMEDIATE SQUAMOUS CELLS

Comments: Cell #1 is similar to the cell depicted in Figure 1 except that there is no wrinkling of the cytoplasm and no perinuclear clear zone. The degree of maturation represented in this cell is probably less than that of the cell in Figure 1.

Cell #2 has an ellipsoidal configuration and a cell volume less than that represented by Cell #1. The oval configuration of the nucleus reflects the pressures which were exerted on the cell. The nuclear mass is somewhat larger than is usually observed in a cell of this volume in the mucosa of the cervix.

PETER STOLL
Heidelberg, Germany

Terminology: Cells #1 and #3: SUPERFICIAL (SQUAMOUS EPITHELIAL) CELLS
Cell #2: INTERMEDIATE (SQUAMOUS EPITHELIAL) CELL

Comments: To me only Cell #2 exhibits a really vesicular nucleus; #3, beginning karyopyknosis; and #1, complete karyopyknosis.

It may be a matter of convention to separate upper and lower superficial cells, using not only the nuclear shape but also the staining reaction of the cytoplasm.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cell #1: SUPERFICIAL CELL
Cells #2 and #3: INTERMEDIATE CELLS

Comments: In my opinion both #2 and #3 are actually intermediate cells derived from different layers of the same intermediate zone (#2 from a deeper layer than #3).

I recognize intermediate cells, as such, based mainly on the appearances of their vesicular nuclei.

The morphological features of the cells in the photomicrograph fit well the definition given for cells of this type.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL showing the characteristic pyknotic nucleus
Cells #2 and #3: INTERMEDIATE SQUAMOUS CELLS showing vesicular nuclei

Comments: I believe that the epithet "non-cornified," frequently used when dealing with epithelial cells with vesicular nuclei (Cells #2 and #3) is redundant since all normally occurring squamous epithelial cells in the vagina and ectocervix are free of "cornu" (horn), even those which are often, but erroneously, called "cornified."

I submit that we recognize only three types of normally occurring cells exfoliating from the vagina and ectocervix:

- 1) superficial squamous cell, identified by the presence of a pyknotic nucleus, regardless of cytoplasmic staining reaction.
 - 2) intermediate squamous cell, identified by the presence of a vesicular nucleus in a differentiated squamous epithelial cell, large and polygonal, regardless of cytoplasmic staining reaction.
 - 3) parabasal cell, identified as a relatively small, round or oval cell containing a normal nucleus. The size of the cell is somewhat variable. Parabasal cells are sometimes multi-nucleated. The cytoplasmic staining reaction is usually cyanophilic, but may vary.
- (Basal cells are not usually found in smears.)

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cell #1: SUPERFICIAL CELL with pyknotic nucleus
Cells #2 and #3: INTERMEDIATE CELLS with vesicular nuclei

Comments: For reasons of simplicity and for teaching purposes, we should retain the three types: superficial, intermediate and parabasal cells. However, I distinguish between a superficial cell with pyknotic nucleus and a superficial cell with vesicular nucleus. Even if one cannot draw a definite line between superficial and intermediate cells with this classification, I speak of an intermediate cell where one can identify it by its form definitely as such. In those cases where I am not sure, I consider the cell with a vesicular nucleus as a superficial cell.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 2

86 "first preference" votes were cast for terminologies of Figure 2; the following preferences were expressed:

79 of the 86 "first preference" votes were cast for terminologies which stated that

Cell #1 is a SUPERFICIAL (SQUAMOUS) CELL and that
Cells #2 and #3 are INTERMEDIATE (SQUAMOUS) CELLS.

5 of the 86 "first preference" votes were cast for the terminology which stated that

Cell #1 is a SUPERFICIAL SQUAMOUS EPITHELIAL CELL with a pyknotic nucleus
Cell #2 is a SQUAMOUS EPITHELIAL CELL probably derived from the INTERMEDIATE zone with a vesicular nucleus, and
Cell #3 is a SQUAMOUS EPITHELIAL CELL probably derived from the SUPERFICIAL zone with partly pyknotic nucleus.

2 of the 85 "first preference" votes were cast for the terminology which stated that

Cell #1 is a CORNIFIED CELL (because of common usage)
Cells #2 and #3 are INTERMEDIATE CELLS.

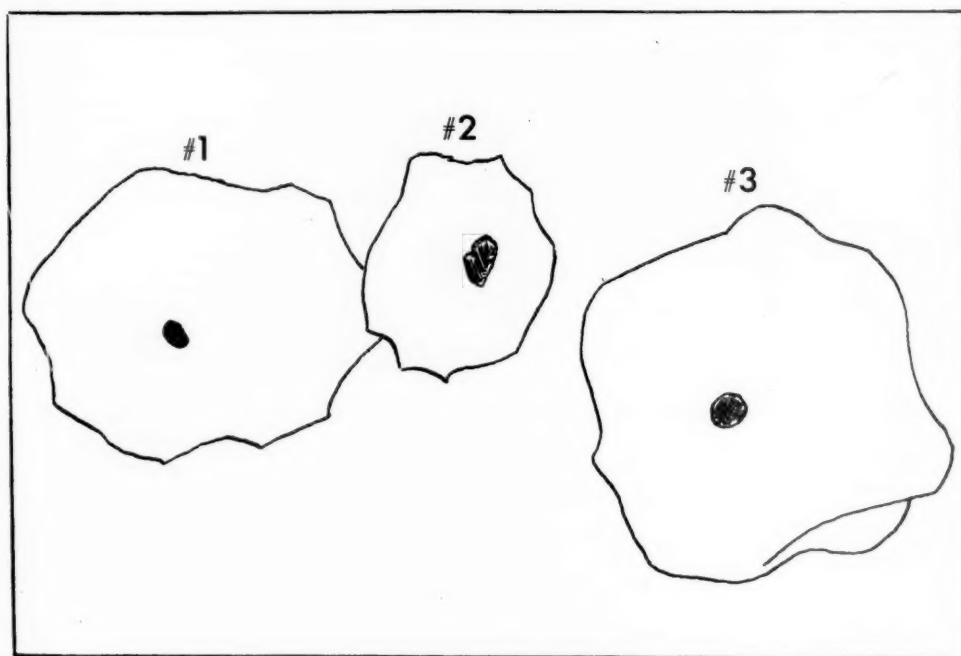
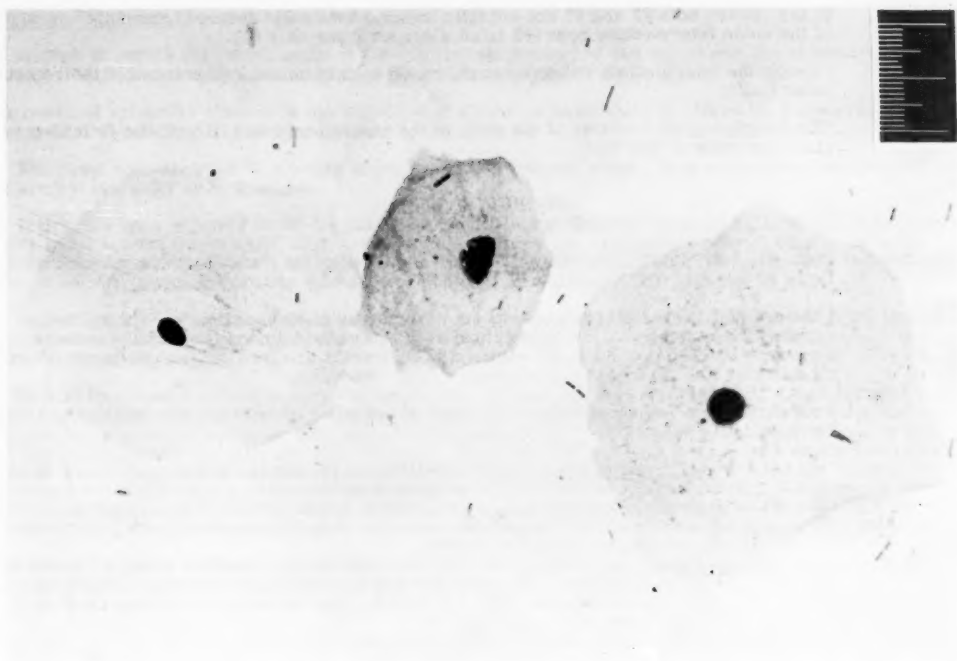


FIG. 3.—Vaginal smear of a 22 year old woman. L.M.P. 14 days ago. Normal gynecological findings. ($20\ \mu$ scale imprinted.)

Suggested Terminology by Preference of the Majority: Cell #1: SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS; Cells #2 and #3: INTERMEDIATE (SQUAMOUS) CELLS.

FIGURE 3.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

Terminology: Cell #1: CORNIFIED CELL
Cell #2: INTERMEDIATE CELL
Cell #3: PRECORNIFIED CELL

Comments: I agree in general with the comments of Wied.

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL (pyknotic nucleus)
Cell #2: INTERMEDIATE SQUAMOUS CELL
Cell #3: INTERMEDIATE SQUAMOUS CELL (OF UPPER LAYER)

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cells #2 and #3: INTERMEDIATE SQUAMOUS CELLS

Comments: None. I agree with Wied.

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with a pyknotic nucleus
Cells #2 and #3: SQUAMOUS CELLS most likely of the SUPERFICIAL type with partly pyknotic nuclei.

Comments: I cannot well agree with the comments of Wied since pyknosis is not an absolute but a relative term.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL (exhibiting pyknotic nucleus)
Cell #2: INTERMEDIATE SQUAMOUS CELL (exhibiting one or two vesicular nuclei)
Cell #3: INTERMEDIATE SQUAMOUS CELL (exhibiting a vesicular nucleus)

Comments: I agree completely with the comments of Wied.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: Cells #1 and #3: SUPERFICIAL SQUAMOUS CELLS
Cell #2: INTERMEDIATE SQUAMOUS CELL

Comments: Cell #1 represents a classical superficial squamous cell with nuclear pyknosis. Cell #2 represents an intermediate cell with binucleation. The arrangement of the nuclear chromatin is compatible with that observed in the interphasic period. Cell #3 has a translucent nuclear mass indicative of an early stage of pyknosis while the nucleus of Cell #1 represents a more advanced state of pyknosis.

PETER STOLL
Heidelberg, Germany

Terminology: Cells #1 - #3: All cells are SUPERFICIAL, with greater or lesser degrees of karyopyknosis.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cell #1: SUPERFICIAL CELL
Cells #2 and #3: INTERMEDIATE CELLS
Comments: See comments on Figure 1 and Figure 2.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL showing characteristic pyknotic nucleus
Cell #2: INTERMEDIATE SQUAMOUS CELL showing one or two vesicular nuclei
Cell #3: INTERMEDIATE SQUAMOUS CELL showing a vesicular nucleus
Comments: Since at the present time there is no reason for calling Cell #2 "intermediate" and Cell #3 "superficial non-cornified" other than the subjective criterion that one is slightly larger than the other, I suggest substitution of the criterion of the presence of a pyknotic nucleus for a "superficial cell." If these cells do not contain pyknotic nuclei, they should be called "intermediate."

HANS KLAUS ZINER
Cologne, Germany

Terminology: Cell #1: SUPERFICIAL CELL WITH PYKNOTIC NUCLEUS
Cell #2: SUPERFICIAL CELL WITH PRE-PYKNOTIC NUCLEUS
Cell #3: SUPERFICIAL CELL WITH VESICULAR NUCLEUS
Comments: I call all three cells superficial cells since their form speaks rather for a cell type from the superficial layers than from another.

TERMINOLOGY OF PARTICIPANTS IN THE OPINION POLL WHICH DIFFERED FROM THE
SUGGESTIONS OF THE TERMINOLOGY SUB-COMMITTEE ON PHOTOMICROGRAPHS

PIERRE HAOUR
Lyon, France

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL showing characteristic pyknosis
Cell #2: INTERMEDIATE CELL
Cell #3: SUPERFICIAL SQUAMOUS CELL with pre-pyknotic nucleus

ERICA WACHTEL
London, England

Terminology: Cell #1: SUPERFICIAL CELL with pyknotic nucleus
Cell #2: INTERMEDIATE CELL with bi-lobulated vesicular nucleus
Cell #3: SUPERFICIAL CELL with vesicular nucleus

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 3

61 "first preference" votes were cast for terminologies of Figure 3; the following preferences have been expressed:

39 of the 61 "first preference" votes were cast in favor of the following terminologies:

Cell #1: SUPERFICIAL (SQUAMOUS) CELL
Cells #2 and #3: INTERMEDIATE (SQUAMOUS) CELLS

10 of the 61 "first preference" votes were cast in favor of the terminologies which stated that all cells are SUPERFICIAL CELLS with various degrees of karyopyknosis.

10 of the 61 "first preference" votes were cast in favor of the terminology which stated that Cell #1 and #3 are SUPERFICIAL SQUAMOUS CELLS, and Cell #2 is an INTERMEDIATE SQUAMOUS CELL.

2 of the 61 "first preference" votes were cast for the terminology which stated that Cell #1 is a CORNIFIED CELL; Cell #2 is an INTERMEDIATE CELL; and Cell #3 is a PRECORNIFIED CELL.

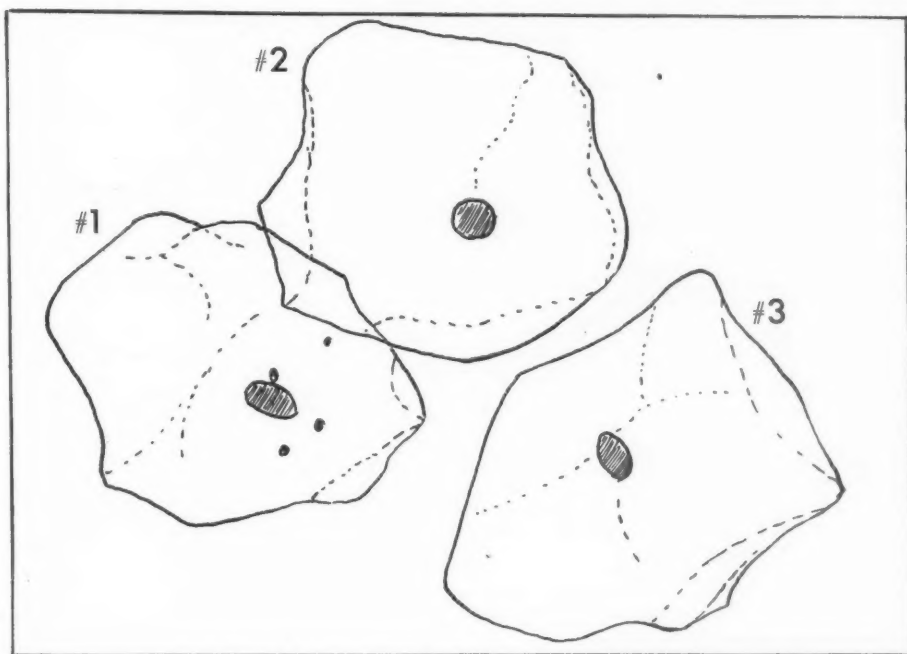
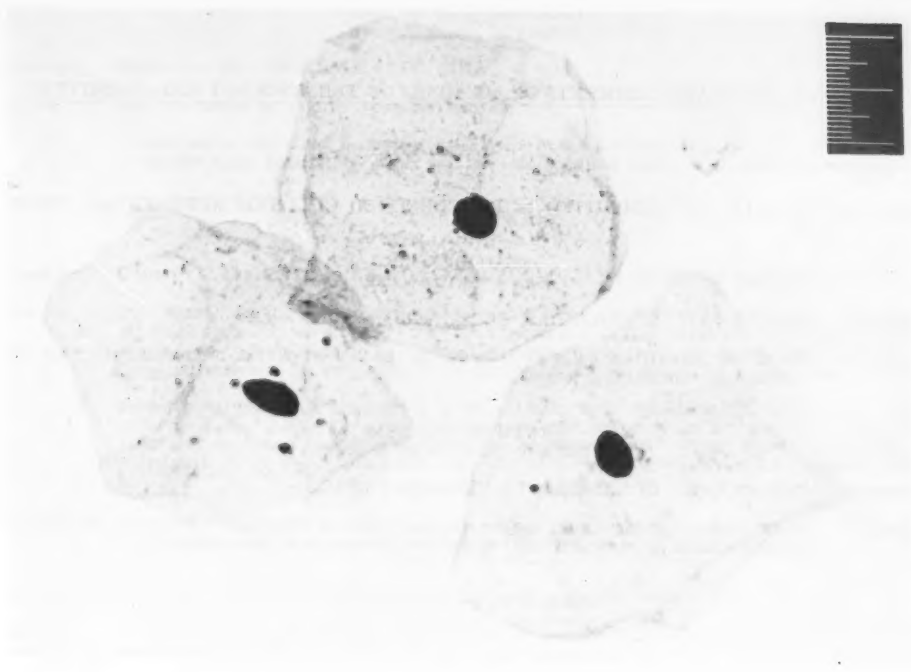


FIG. 4.—Vaginal smear of a 22 year old woman. L.M.P. 14 days ago. Normal gynecological findings. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: 34 votes for SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS; 31 votes for INTERMEDIATE CELLS.

FIGURE 4.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: Cells #1 - #3: CORNIFIED or PRECORNIFIED CELLS OF SUPERFICIAL ORIGIN

JEAN BERGER
Basel, Switzerland

Terminology: Cells #1 - #3: SUPERFICIAL CELLS with vesicular nuclei

Comments: These are superficial cells as seen during the second part of the menstrual cycle showing folding and containing granules.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Cells #1 - #3: INTERMEDIATE SQUAMOUS CELLS

Comments: In the photograph the nuclei appear almost devoid of structure. However, the drawing indicates them as vesicular and on that basis I consider them intermediate.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cells #1 - #3: SUPERFICIAL SQUAMOUS EPITHELIAL cells exhibiting partly pyknotic nuclei

Comments: The term "vesicular" should be reserved for well-preserved round or oval nuclei which show distinct structural details.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cells #1 - #3: INTERMEDIATE SQUAMOUS CELLS

Comments: Upon a superficial examination of this picture, one might call these cells superficial cells because the nuclei seem to be dark, even pyknotic. This could be due to the inevitable modification of the true picture by photography or the printing. Nevertheless, since the micrometric scale is imprinted, it is clearly shown that the measurement of the nucleus of each cell shows a diameter larger than 6 μ . I believe that these cells examined under the phase microscope would not give the typical brilliant red color of the true pyknotic nucleus.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: Cells #1 - #3: SUPERFICIAL SQUAMOUS CELLS

Comments: These cells formerly would be classified as "precornified cells." The translucent nuclear masses indicate proteolytic activity which culminates in pyknosis. The chromatin pattern is not that of an interphasic nucleus. Admittedly, the nuclear changes are not as far advanced as those in some of the previous superficial cells but the reproductions suggest early degenerative changes in the nucleus. Granular inclusions are present in the cytoplasm of Cell #1.

PETER STOLL
Heidelberg, Germany

Terminology: Cells #1 - #3: SUPERFICIAL CELLS

Comments: Extensive flattening of the cells with beginning pyknosis of the nuclei.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cells #1 - #3: INTERMEDIATE CELLS

Comments: See comments on Figure 1 and Figure 2.

In this particular case, I consider the cells in the photomicrograph as intermediate cells (from the most superficial layers of the intermediate zone), with dark overstained nuclei.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Cells #1 - #3: INTERMEDIATE SQUAMOUS CELLS exhibiting vesicular nuclei.

Comments: Previously, I called these cells "superficial non-cornified cells," but now I realize that all cells normally exfoliating from the vaginal and ectocervical epithelia are non-cornified since none of them contain keratin. The term, then, is no more definitive than would be the description of all squamous cells derived from the vagina as "non-mucus-producing."

An alternative terminology which might be left, then, would be "superficial cell with vesicular nucleus." However, so long as no one can define where a "superficial cell with vesicular nucleus" ends and where an "intermediate cell" starts, I am for including all polygonal, large squamous epithelial cells with vesicular nuclei in the category "intermediate."

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cells #1 - #3: SUPERFICIAL CELLS with vesicular nuclei.

Comments: I believe one should distinguish two types of superficial cells: (1) those with vesicular nuclei, and (2) those with pyknotic nuclei.

The differentiation between superficial and intermediate cells is made on the basis of form of the cells: the intermediate cell is smaller and longer than the superficial cell and is related in its form to the navicular cell.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 4

67 "first preference" votes were cast for terminologies of Figure 4; the following preferences have been expressed:

34 of the 67 "first preference" votes were cast for terminologies which stated that the depicted cells are SUPERFICIAL CELLS.

31 of the 67 "first preference" votes were cast for terminologies which stated that the depicted cells are INTERMEDIATE CELLS because they do not contain pyknotic nuclei.

2 of the 67 "first preference" votes were cast for terminologies which stated that the depicted cells are CORNIFIED or PRECORNIFIED CELLS OF SUPERFICIAL ORIGIN.

(Note: The slight majority vote is incongruent with the majority vote on "Definition of Superficial Cell" in this edition. - Ed.)

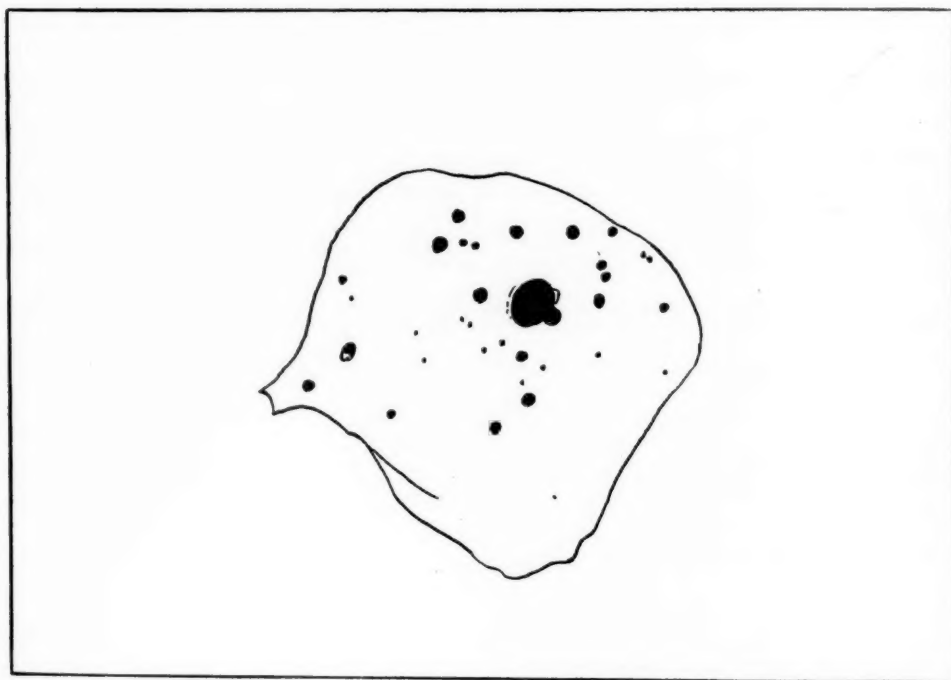
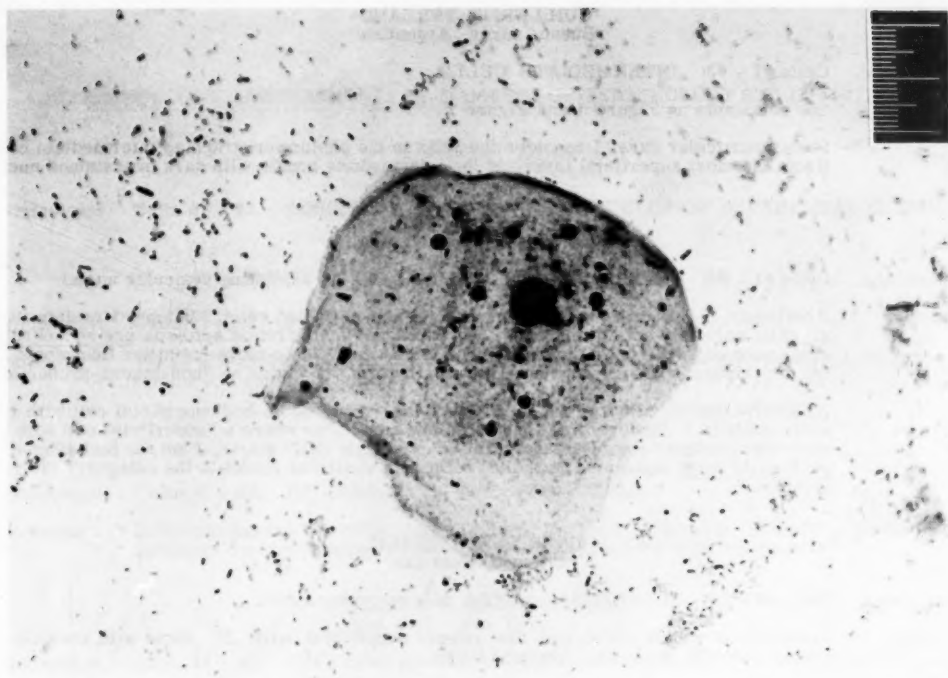


FIG. 5.—Vaginal smear of a 57 year old surgical castrate on estrogen therapy. Hysterectomy and bilateral salpingo-oophorectomy 15 years ago. Present intravaginal estrogen therapy: $\frac{1}{2}$ mg diethylstilbestrol daily through eight days. (20μ scale imprinted.)

Suggested Terminology by Preference of the Majority: SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELL.

FIGURE 5.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: CORNIFIED CELL with HYPERACTIVE NUCLEUS and large cytoplasmic granules characteristic of high estrogenic therapy.

JEAN BERGER
Basel, Switzerland

Terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with pyknotic nucleus and granules

Comments: These cells are often seen after estrogen therapy or in the ante partum or post partum periods, or in patients with abortions.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: SUPERFICIAL SQUAMOUS CELL

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with a pyknotic nucleus in process of disintegration.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: SUPERFICIAL SQUAMOUS CELL

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: SUPERFICIAL SQUAMOUS CELL with granular inclusions

Comments: The nuclear mass is pyknotic with lobation. The latter has been interpreted as budding by some authors. Such a cell is not uncommon in an epithelium subjected to estrogenic stimulation.

PETER STOLL
Heidelberg, Germany

Terminology: SUPERFICIAL (SQUAMOUS EPITHELIAL) CELL

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: SUPERFICIAL CELL

Comments: The pyknotic nucleus allows the inclusion of this cell in the group of superficial cells.

A rather large nucleus doesn't exclude pyknosis. In this particular cell the nucleus looks irregular and larger than usual. It is possible that some of the scattered cytoplasmic granules may be the reason for this. In smears it would be easier than in a photomicrograph to reach a correct recognition between actual size of the nucleus and artifacts.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: SUPERFICIAL SQUAMOUS CELL showing a characteristic pyknotic nucleus.

Comments: In this large cell the nucleus seems larger than one usually classified as a pyknotic nucleus, apparently because some of the cytoplasmic granules are directly attached to the nucleus.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: SUPERFICIAL CELL WITH PYKNOTIC NUCLEUS

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 5

100 "first preference" votes were cast for terminologies of Figure 5; the following preferences were expressed:

97 of the 100 "first preference" votes were cast for terminologies which expressed that the depicted cell is a SUPERFICIAL (SQUAMOUS) CELL.

3 of the 100 "first preference" votes were cast for the terminologies which expressed that the depicted cell is a CORNIFIED CELL with HYPERACTIVE NUCLEUS.

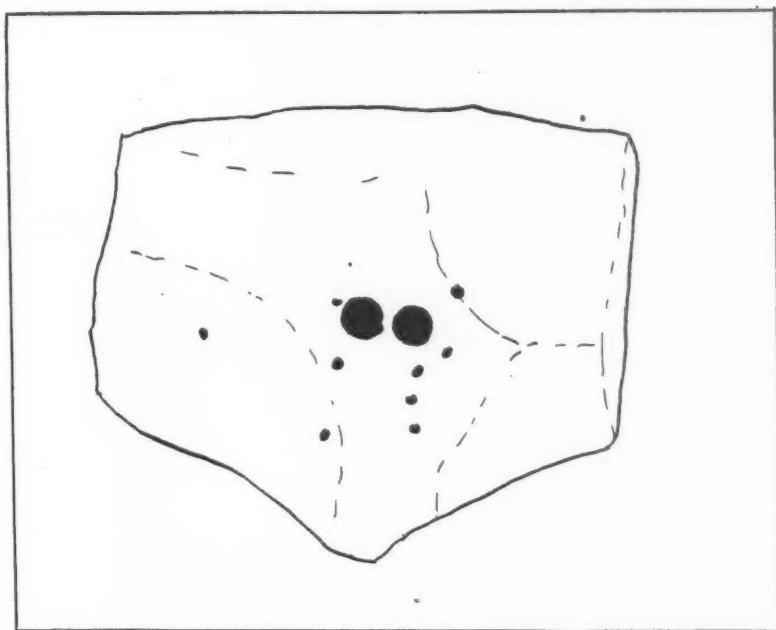
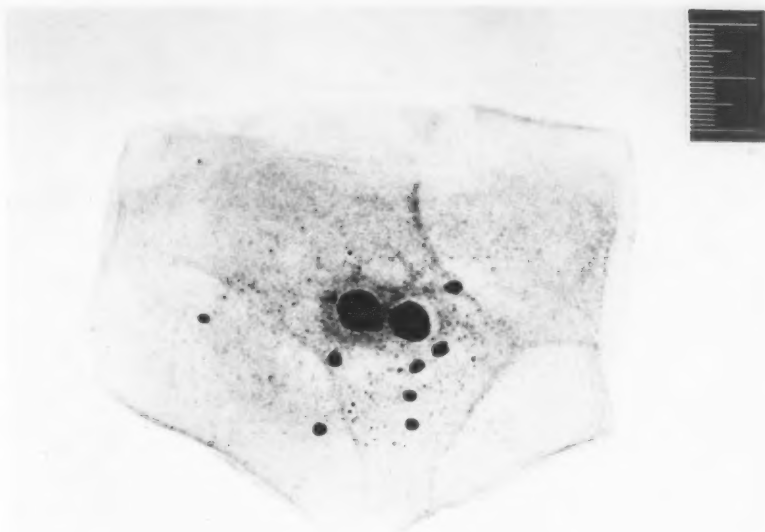


FIG. 6.—Vaginal smear of a 25 year old woman. L.M.P. 14 days ago. Normal gynecological findings. Healthy vaginal flora. ($20\ \mu$ scale imprinted.)

Suggested Terminology by Preference of the Majority: BINUCLEATED (or DOUBLE-NUCLEATED) SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELL.

FIGURE 6.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: BINUCLEATED CORNIFIED CELL with cytoplasmic granules as observed with high estrogenic activity.

JEAN BERGER
Basel, Switzerland

Terminology: BINUCLEATED SUPERFICIAL SQUAMOUS EPITHELIAL CELL with granules and perinuclear halo.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: DOUBLE-NUCLEATED SUPERFICIAL SQUAMOUS CELL

Comments: I do not think the shape of the pyknotic nucleus critical or of any consequence in defining such a cell as superficial squamous.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: BINUCLEATED SUPERFICIAL SQUAMOUS EPITHELIAL CELL containing cytoplasmic granules.

Comments: This cell may be considered atypical.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: BINUCLEATED, SUPERFICIAL SQUAMOUS CELL

Comments: Such binucleated, superficial squamous epithelial cells are rare in normal women, but when present they have no special significance. In my material with routine examination, they comprise not more than 7% of all slides. With more detailed examination of every smear, however, this number may be raised 5%, more or less.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: SUPERFICIAL SQUAMOUS CELL

Comments: This cell has numerous granular inclusions in the cytoplasm. The binucleation in this cell is of no special significance, although it implies nuclear division without cytoplasmic division.

PETER STOLL
Heidelberg, Germany

Terminology: BINUCLEATED SUPERFICIAL (SQUAMOUS EPITHELIAL) CELL

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: SUPERFICIAL CELL (BINUCLEATED)

Comments: The cell is a superficial cell. Both nuclei show pyknosis. "Binucleated" is added to denote the special quality of this cell. One of the nuclei (the left one) looks irregularly shaped; it could be due (as for the nucleus of Figure 5) to cytoplasmic granules attached to it.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: BINUCLEATED, SUPERFICIAL SQUAMOUS CELL

Comments: There are some cytoplasmic granules present, one of which seems to lie so close to one of the pyknotic nuclei that the nucleus seems to be irregularly outlined.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: BINUCLEATED, SUPERFICIAL (SQUAMOUS EPITHELIAL) CELL with pyknotic nuclei.

Comments: Cytoplasmic granules are present as also observed in Figure 5.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 6

96 "first preference" votes were cast for terminologies of Figure 6; the following preferences have been expressed:

95 of the 96 "first preference" votes were cast for terminologies which stated that the depicted cell is a BINUCLEATED (or DOUBLE-NUCLEATED) SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELL.

1 of the 96 "first preference" votes was cast for the terminology which stated that the depicted cell is a BINUCLEATED CORNIFIED CELL with cytoplasmic granules.

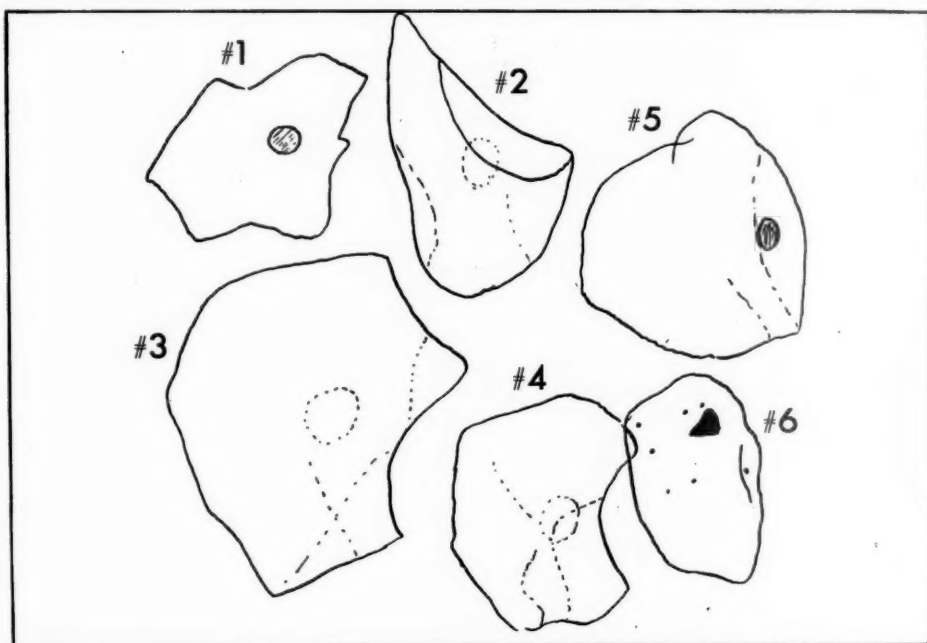
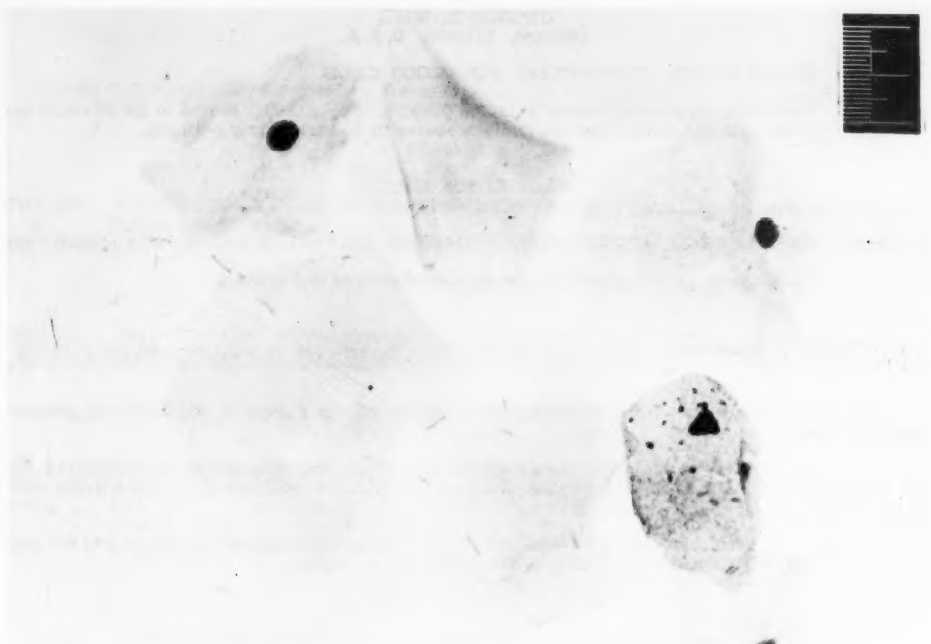


FIG. 7.—Vaginal smear of a 35 year old woman, 22 weeks pregnant with normal gynecological findings. Healthy vaginal flora. (20 μ scale imprinted.) Colposcopy: Leukoplakia.

Suggested Terminology by Preference of the Majority: Cells #2-#4: ANUCLEATE SQUAMES (or CELLS): 22 votes; ANUCLEATED SUPERFICIAL SQUAMOUS CELLS: 19 votes. See text for detailed opinions on other cells.

FIGURE 7.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

- Terminology: Cells #1 & #5: CORNIFIED (or PRECORNIFIED) CELLS
Cells #2 - #4: HYPERCORNIFIED CELLS (found with high estrogen or with leukoplakia)
Cell #6: SMALL CORNIFIED (or INTERMEDIATE) CELL
- Comments: These cells are most unusual in pregnancy.

JEAN BERGER
Basel, Switzerland

- Terminology: Cell #1: SUPERFICIAL CELL with VESICULAR NUCLEUS
Cells #2 - #4: CORNIFIED CELLS
Cell #5: INTERMEDIATE SQUAMOUS EPITHELIAL CELL with VESICULAR NUCLEUS
Cell #6: INTERMEDIATE SQUAMOUS EPITHELIAL CELL with PYKNOTIC NUCLEUS
- Comments: The cells #2, #3 and #4 are pre-keratinized cells or keratinized cells which can be proven only by cytochemical staining techniques such as the S-H or S-S reactions.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

- Terminology: Cells #1 & #5: INTERMEDIATE SQUAMOUS CELLS
Cells #2 - #4: ANUCLEATED SUPERFICIAL SQUAMOUS CELLS
Cell #6: SUPERFICIAL SQUAMOUS CELL
- Comments: Is "squame" a word? It sounds like laboratory slang to me.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

- Terminology: Cell #1: SQUAMOUS EPITHELIAL CELL probably SUPERFICIAL with a partly pyknotic nucleus
Cells #2 - #4: ANUCLEATED SUPERFICIAL SQUAMOUS CELLS - I would call them KERATINIZED if they were stained orange-yellow.
Cell #5: SQUAMOUS EPITHELIAL CELL probably SUPERFICIAL with a partly pyknotic nucleus
Cell #6: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with a pyknotic nucleus and cytoplasmic granules.

J. PAUL PUNDEL
Luxembourg, Luxembourg

- Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
Cells #2 - #4: SQUAMES ("anucleate squames," in my opinion, is a pleonasm, since "squame" means an anucleate squamous cell).
Cells #5 & #6: At first examination, one might call both cells "superficial cells," but if we take for diagnosis the micrometric criterion for pyknosis (as no description of these cells under the phase microscope is given), the exact diagnosis in my terminology is:
Cell #5: INTERMEDIATE SQUAMOUS CELL (diameter of the nucleus is larger than 6μ).
Cell #6: SUPERFICIAL SQUAMOUS CELL (greatest diameter of the nucleus is not-larger than 6μ).

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

- Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
Cells #2 - #4: ANUCLEATE SQUAMES
Cell #5: INTERMEDIATE CELL
Cell #6: GRANULAR CELL

Comments: The anucleate squames indicate the presence of keratin on the surface. This is usually associated with an underlying granular cell layer from which Cell #6 is derived.

PETER STOLL
Heidelberg, Germany

Terminology: Cells #1, #5 & #6: INTERMEDIATE CELLS
Cells #2 - #4: ANUCLEATE SQUAMES (Kernlose Schuppenzelle)

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cells #1 & #5: INTERMEDIATE CELLS
Cells #2 - #4: ANUCLEATE CELLS
Cell #6: SUPERFICIAL CELL

Comments: For #2, #3 and #4, I would prefer the term anucleate cells rather than the term anucleated squames used in some laboratories. Whether or not the cytoplasm of these cells contains keratin cannot be said from smears with Papanicolaou's method. I consider Cell #6 as an abnormal superficial cell which is disregarded when counting cells to evaluate the percentage of each type of cell.

In an evaluation of cell types, only normal cells should be considered, ignoring those cells that exhibit peculiar features and may lead to confusion or to equivocal interpretations.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL showing a vesicular nucleus
Cells #2 - #4: ANUCLEATE SQUAMES
Cell #5: INTERMEDIATE SQUAMOUS CELL showing a vesicular nucleus
Cell #6: SUPERFICIAL SQUAMOUS CELL showing a characteristic pyknotic nucleus

Comments: I prefer the use of the term "ANUCLEATE SQUAME" to "KERATINIZED CELL" since anucleation is immediately apparent. That the cell contains keratin is not demonstrated by the Papanicolaou staining procedure. From other evidence we know that this cell usually contains keratin or pre-keratin. Since we are revising our nomenclature, we should apply wherever possible names which we can back up with visual facts.

Cell #6 contains a triangular, pyknotic nucleus and cytoplasmic granules. In the original slide the cytoplasm of this cell stained deeply eosinophilic.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cells #1 & #5: SUPERFICIAL CELLS WITH VESICULAR NUCLEI
Cells #2 - #4: ANUCLEATE SUPERFICIAL CELLS ("SCHUPPENZELLE")
Cell #6: SUPERFICIAL CELL WITH PYKNOTIC NUCLEUS

Comments: I call even Cell #1 a superficial cell. It belongs by the form and shape in the upper region of the epithelium, even if the nucleus does not show any signs of pyknosis.

TERMINOLOGY OF PARTICIPANTS IN THE OPINION POLL WHICH DIFFERED FROM THE SUGGESTIONS OF THE TERMINOLOGY SUB-COMMITTEE ON PHOTOMICROGRAPHS

PIERRE HAOUR
Lyon, France

Terminology: Cell #1: INTERMEDIATE CELL
Cell #2: ANUCLEATE SQUAME
Cell #5: SUPERFICIAL SQUAMOUS CELL with pyknotic nucleus
Cell #6: SUPERFICIAL SQUAMOUS CELL because of pyknotic nucleus and granular cytoplasm, but reduced in size

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 7

46 "first preference" votes were cast for terminologies of the Members of the Terminology Sub-Committee. The terminologies given by the Sub-Committee Members were different, and they are not summarized here. The following preferences were expressed for the individual terminologies by the 30 participants in the opinion poll:

9 votes - Guillermo Terzano
7 votes - Ruth M. Graham
7 votes - George L. Wied
6 votes - George N. Papanicolaou
6 votes - Hans Klaus Zinser
5 votes - Peter Stoll
4 votes - J. Paul Pundel
1 vote - J. Ernest Ayre
1 vote - James W. Reagan
0 votes - Jean Berger

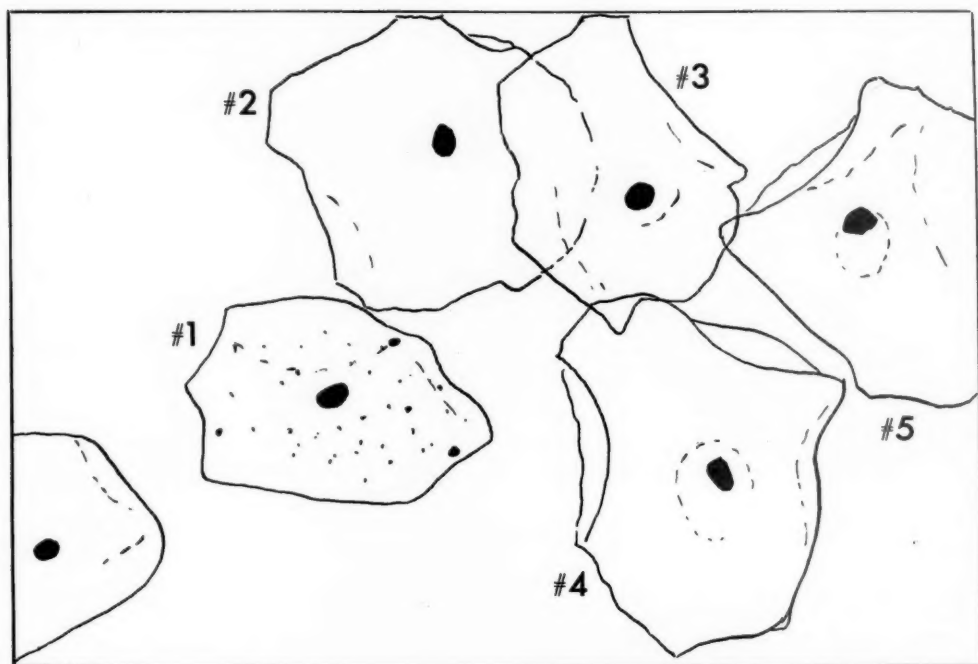
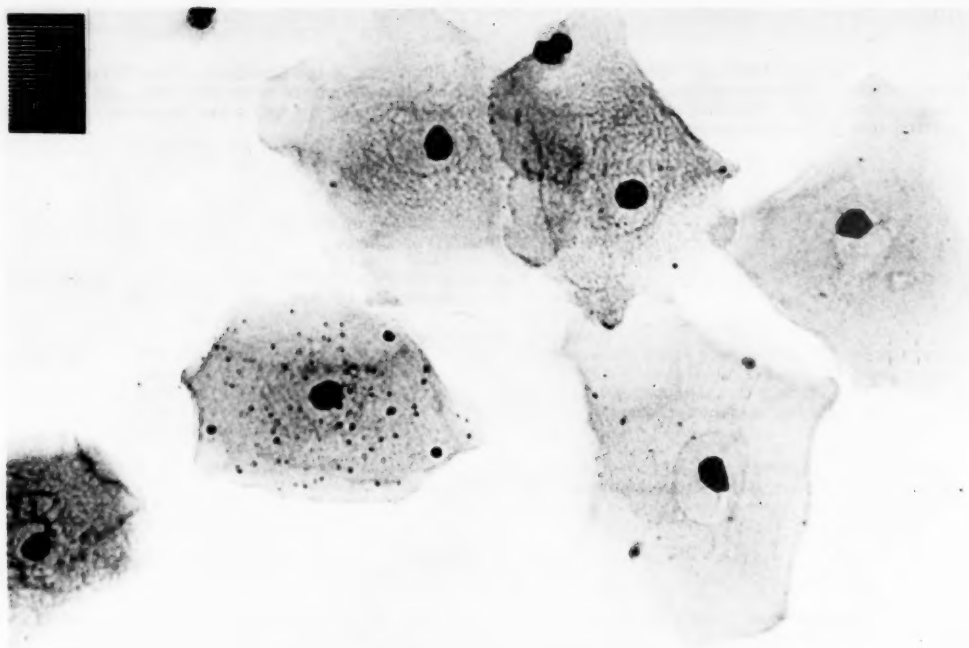


FIG. 8.—Vaginal smear of a 25 year old woman with normal gynecological findings. L.M.P. 14 days ago. Healthy vaginal flora. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS.

FIGURE 8.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: Cells #1 - #5: CORNIFIED CELLS

JEAN BERGER
Basel, Switzerland

Terminology: Cells #1 - #5: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS showing some IN-FLAMMATORY CHANGES

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Cells #1 - #5: SUPERFICIAL SQUAMOUS CELLS

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cells #1 - #5: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS containing pyknotic nuclei

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cells #1 - #5: SUPERFICIAL (EOSINOPHILIC) SQUAMOUS CELLS

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: Cells #1 - #5: SUPERFICIAL SQUAMOUS CELLS

Comments: Some cells contain granular inclusions in their cytoplasm.

PETER STOLL
Heidelberg, Germany

Terminology: Cells #1 - #5: SUPERFICIAL (SQUAMOUS EPITHELIAL) CELLS

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cells #1 - #5: SUPERFICIAL CELLS

Comments: If the cytoplasm stain pink: eosinophilic superficial cells

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Cells #1 - #5: SUPERFICIAL SQUAMOUS CELLS containing pyknotic nuclei

Comments: In the original slide the cytoplasm of all depicted cells stained eosinophilic.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cells #1 - #5: SUPERFICIAL CELLS with pyknotic nuclei

Comments: These cells are apparently a part of a smear from a patient exhibiting marked estrogenic effect (highly proliferated epithelium).

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 8

96 "first preference" votes were cast on terminologies of Figure 8; the following preferences have been expressed:

95 of the 96 "first preference" votes were cast in favor of the following terminology: the depicted cells are SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS. Of these 95 votes, 6 votes were cast for the terminology of Dr. Berger, who added that the cells showed some INFLAMMATORY CHANGES.

1 of the 96 "first preference" votes was cast in favor of the terminology which stated that the depicted cells are CORNIFIED CELLS.

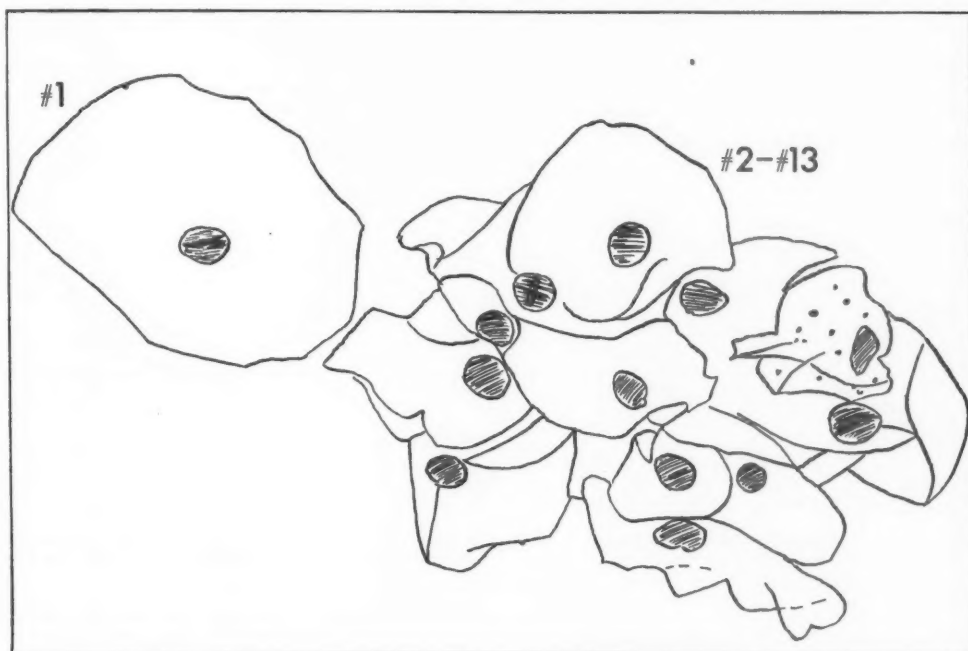
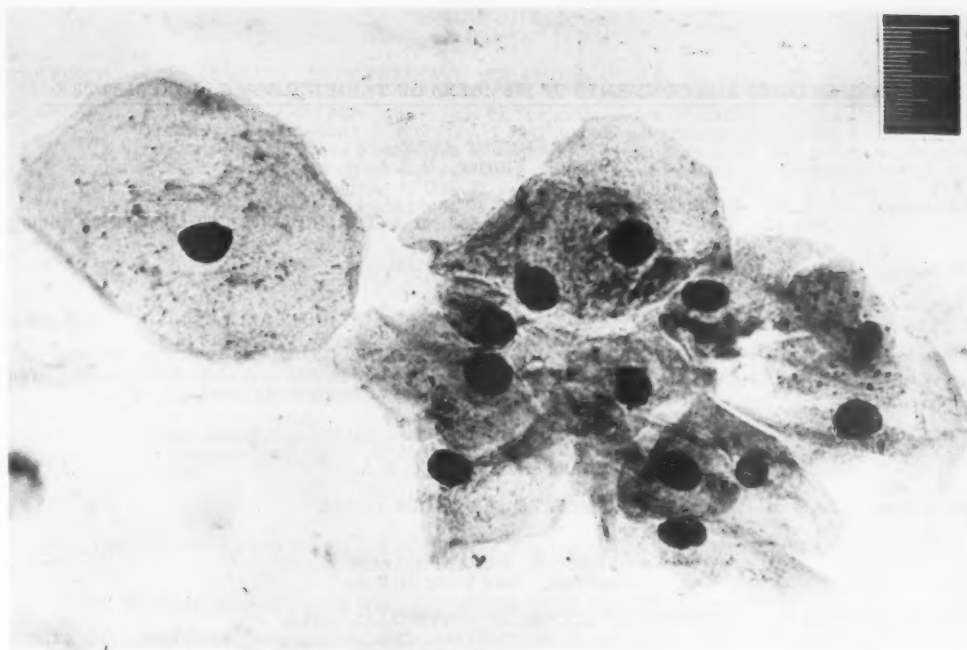


FIG. 9.—Vaginal smear of a 25 year old woman with normal gynecological findings. L.M.P. 24 days ago. Healthy vaginal flora. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: INTERMEDIATE (SQUAMOUS) CELLS.

FIGURE 9.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florides, U.S.A.

Terminology: Cell #1: INTERMEDIATE CELL
Cells #2 - #13: Cluster of PARABASAL or INTERMEDIATE CELLS showing folding, etc., typical of luteal phase.

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with vesicular nucleus.
Cells #2 - #13: TYPICAL INTERMEDIATE CELLS with eccentric lying nuclei ("premenstrual smear" without inflammatory reaction)

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Cells #1 - #13: INTERMEDIATE SQUAMOUS CELLS

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL
Cells #2 - #13: SQUAMOUS EPITHELIAL CELLS, apparently SUPERFICIAL exhibiting folding and partial pyknosis of the nuclei.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cells #1 - #13: INTERMEDIATE SQUAMOUS CELLS

Comments: Nuclear diameter of Cell #1 is larger than 6μ (intermediate cell!).

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: Cells #1 - #13: INTERMEDIATE CELLS

PETER STOLL
Heidelberg, Germany

Terminology: Cells #1 - #13: INTERMEDIATE CELLS

Comments: In regard to Figure 4, I feel that Cell #1 in Figure 9 may show just the beginning of pyknosis, but pyknosis is more advanced in the cells of Figure 4.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cells #1 - #13: INTERMEDIATE CELLS

Comments: In the presence of these cells one recalls the "spinal cells with intercellular bridges," derived from the stratum spinosum superficiale and from the stratum spinosum profundum.

All these cells (as cells in Figure 2) should be considered as cells derived from different layers of the same intermediate zone of the vaginal epithelium.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Cells #1 - #13: INTERMEDIATE SQUAMOUS CELLS, all containing vesicular nuclei.

Comments: Previously I would have called Cell #1 "superficial non-cornified" and the other cells probably "intermediate." However, I really could not explain exactly why I made this differentiation or give a definition of each which would keep these two cell types descriptively apart. Certainly no one will believe that a folded cell is "more intermediate" than a cell which is not folded. If Cell #1 had been pushed into the cluster of Cells #2 - #13, I feel sure it would be folded too.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cell #1: SUPERFICIAL CELL with PRE-PYKNOTIC NUCLEUS
Cells #2 - #13: Probably INTERMEDIATE CELLS

Comments: The nucleus of cell #1 shows a nuclear break which is characteristic for what I call "pre-pyknotic."

From the photograph one cannot state definitely whether or not Cells #2 - #13 are classical intermediate cells. They could also be very folded superficial cells with vesicular nuclei.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 9

70 "first preference" votes were cast for the terminologies of Figure 9;

55 of the 70 "first preference" votes were cast for terminologies which stated that all depicted cells are INTERMEDIATE (SQUAMOUS) CELLS.

11 of the 70 "first preference" votes were cast for terminologies which stated that Cell #1 is a SUPERFICIAL CELL and the other cells are INTERMEDIATE CELLS.

2 of the 70 "first preference" votes were cast for the terminologies which stated that Cell #1 is a SUPERFICIAL SQUAMOUS EPITHELIAL CELL and Cells #2 - #13 are SQUAMOUS EPITHELIAL CELLS, apparently SUPERFICIAL, exhibiting folding and partial pyknosis of the nuclei.

2 of the 70 "first preference" votes were cast for the terminologies which stated that Cell #1 is an INTERMEDIATE CELL and Cells #2 - #13 are PARABASAL or INTERMEDIATE CELLS showing folding typical of the luteal phase.

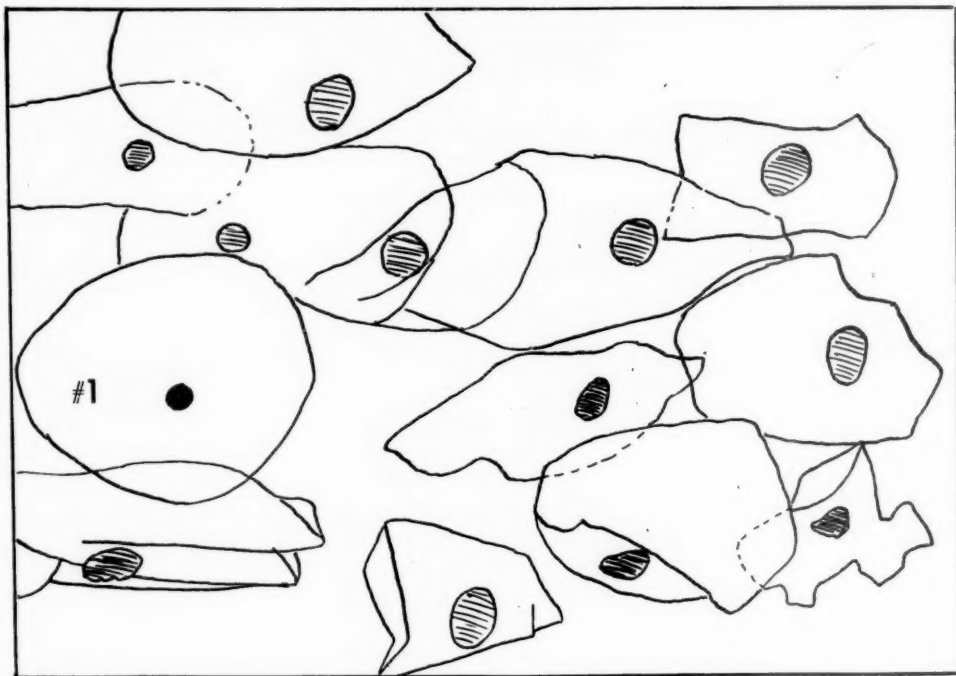
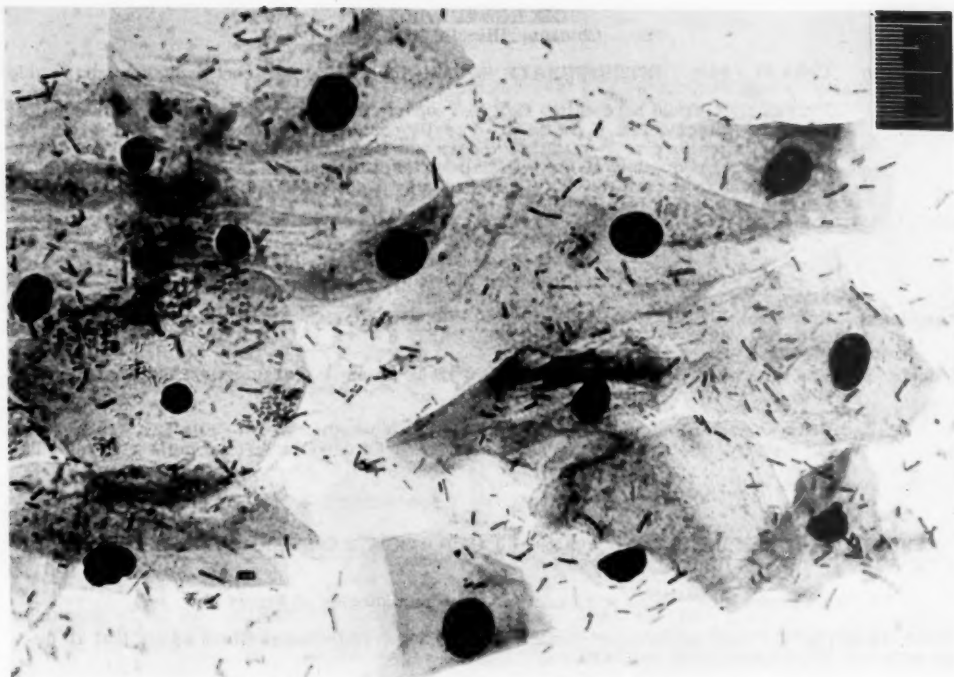


FIG. 10.—Vaginal smear of a 28 year old woman, 20 weeks pregnant. Normal gynecological findings. Vaginal flora: mixed bacteria. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: Cell #1: SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS; the other cells: INTERMEDIATE (SQUAMOUS) CELLS.

FIGURE 10.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

Terminology: Cell #1: CORNIFIED CELL
All other cells: INTERMEDIATE CELLS with vesicular nuclei as seen in pregnancy

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL with PYKNOTIC nucleus
All other cells: INTERMEDIATE SQUAMOUS EPITHELIAL CELLS with VESICULAR nuclei

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
All other cells: INTERMEDIATE SQUAMOUS CELLS

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

Terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS exhibiting folding and various trans-
actions from a VESICULAR to a PYKNOTIC nucleus

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
All other cells: INTERMEDIATE CELLS

Comments: For scientific purposes, I think that exact cytometry under oil immersion or phase con-
trast microscopy should be used for differential diagnosis of the pyknotic nucleus in
dubious cases.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
All other cells: INTERMEDIATE

Comments: The size of the nuclear mass in these intermediate cells suggests a stimulation of the
epithelium such as may occur in pregnancy. On histopathological study the superficial
spinous layer in this cervix would be unusually thick as compared to the normal mucosa.

PETER STOLL
Heidelberg, Germany

Terminology: Cell #1: SUPERFICIAL CELL
All other cells: The 4 cells on the left side of the figure and the 2 cells in the right
lower corner show beginning pyknosis of the nuclei so I might call these
SUPERFICIAL. All others are INTERMEDIATE CELLS.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cell #1: SUPERFICIAL CELL
All other cells: INTERMEDIATE CELLS

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL containing a pyknotic nucleus
All other cells: INTERMEDIATE SQUAMOUS CELLS exhibiting vesicular nuclei

Comments: Among the "intermediate squamous epithelial cells" are some which are smaller than others. If one were to call the smaller "intermediate" and the larger "superficial non-cornified," then one would have really no dividing line to show where one starts and the other one ends. If we are realistic, we will have to admit that cytometry cannot be used to identify the routine smear constituents.

As a whole, the general appearance of the present smear seems to be what Stoll might term "intermediate proliferation with tendency towards maturation." (ACTA CYTOLOGICA 1:96, 1957)

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cell #1: SUPERFICIAL CELL WITH PYKNOTIC NUCLEUS
All other cells: Actually belong to my classification of SUPERFICIAL CELLS WITH VESICULAR NUCLEI

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 10

78 "first preference" votes were cast on terminologies of Figure 10; the following preferences were expressed:

66 of the 78 "first preference" votes were cast in favor of the following terminology: Cell #1: SUPERFICIAL (SQUAMOUS) CELL; all other cells: INTERMEDIATE (SQUAMOUS) CELLS.

11 of the 78 "first preference" votes were cast in favor of the following terminology: all cells are SUPERFICIAL (SQUAMOUS EPITHELIAL) CELLS.

1 of the 78 "first preference" votes was cast for the terminology: Cell #1: CORNIFIED CELL; all other cells: INTERMEDIATE CELLS with vesicular nuclei as seen in pregnancy.

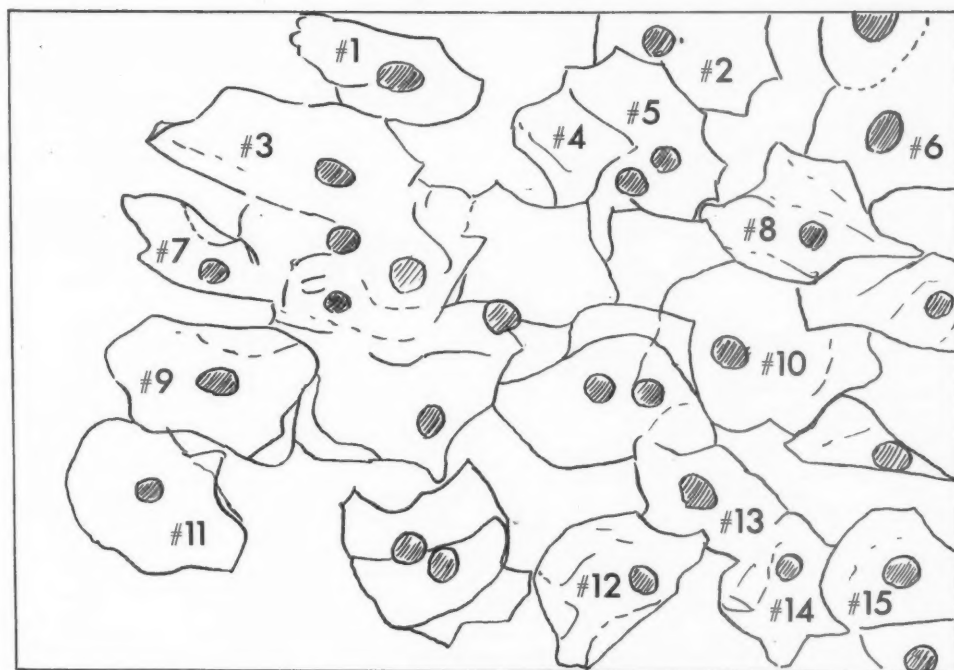
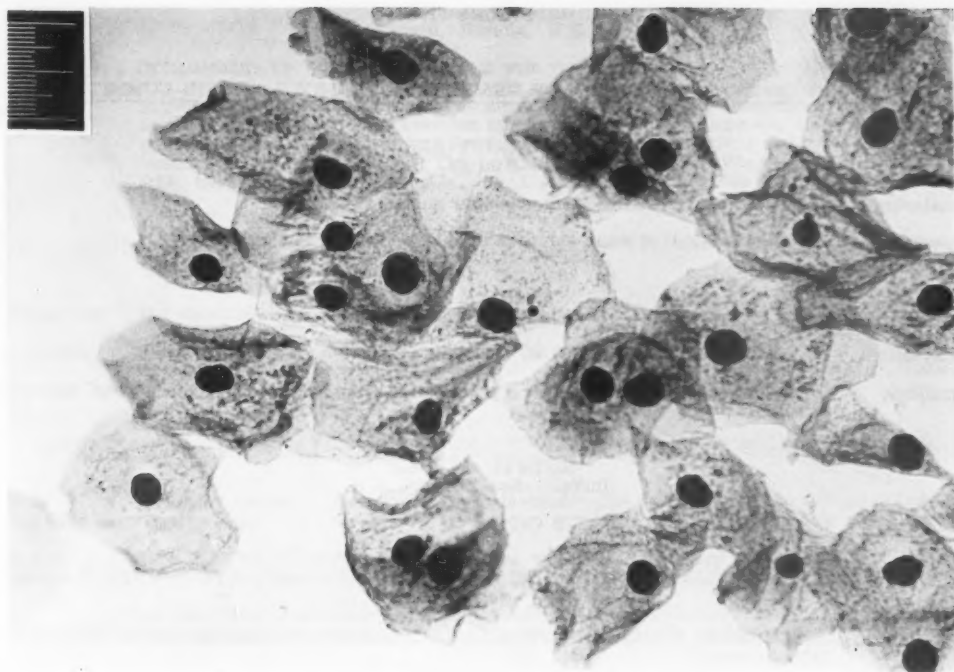


FIG. 11.—Vaginal smear of a 68 year old surgical castrate, 28 years after hysterectomy and bilateral salpingo-oophorectomy. Healthy vaginal flora. No hormone therapy. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: INTERMEDIATE (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS.

FIGURE 11.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

Terminology: INTERMEDIATE CELLS with vesicular nuclei
Comments: Probably a result of some estrogen in food or produced by adrenals?

JEAN BERGER
Basel, Switzerland

Terminology: INTERMEDIATE SQUAMOUS EPITHELIAL CELLS with vesicular nuclei
Comments: For a 68-year-old woman rather a smear with some estrogenic effect (adrenal estrogenic effect?).

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

Terminology: INTERMEDIATE SQUAMOUS CELLS

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

Terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS with vesicular as well as partially pyknotic nuclei

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: INTERMEDIATE SQUAMOUS CELLS

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: INTERMEDIATE CELLS
Comments: It is difficult from the reproduction to determine whether the nuclear masses are translucent or have a chromatin pattern comparable to that observed in the interphasic nucleus. There is less evidence of stimulation in the epithelium than was noted in the cells of Figure #10. While the estrogen has been reduced in this woman, perhaps there is some estrogen derived from the adrenals influencing the epithelium.

PETER STOLL
Heidelberg, Germany

Terminology: INTERMEDIATE CELLS
Comments: Some of the cells show beginning pyknosis of the nuclei, but on the other hand they are not as flattened as is expected of true superficial cells.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: INTERMEDIATE CELLS
Comments: Sometimes it is difficult to differentiate a true pyknotic nucleus from a dark hyperchromatic nucleus. The difficulty is greater in photomicrographs than in smears. Nevertheless, in the presence of cells like these, I am inclined to consider the nuclei as dense and hyperchromatic (may be over-stained) rather than pyknotic.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: INTERMEDIATE SQUAMOUS CELLS with vesicular nuclei

Comments: Some of the nuclei appear almost as dense as pyknotic nuclei under the bright field microscope (which has been used here for micro-photography). However, under the phase-microscope it was apparent that there was still sufficient nuclear structure present to classify them as "vesicular." The technique is described by Wied (Fertility and Sterility 6:61, 1955) and by Pundel and Lichtfus (Bul. Soc. Roy. Belge de Gyn. and Obst. 28:630, 1956).

HANS KLAUS ZINSER
Cologne, Germany

Terminology: INTERMEDIATE CELLS with vesicular nuclei

Comments: These cells predominantly exhibit the form of intermediate cells. In my opinion, the degree of nuclear density is not the most important consideration for the classification.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 11

108 "first preference" votes were cast for terminologies of Figure 11: the following preferences have been expressed:

105 of the 108 "first preference" votes were cast for the following terminology: all depicted cells are INTERMEDIATE (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS.

3 of the 108 "first preference" votes were cast for the terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS, with vesicular as well as partially pyknotic nuclei.

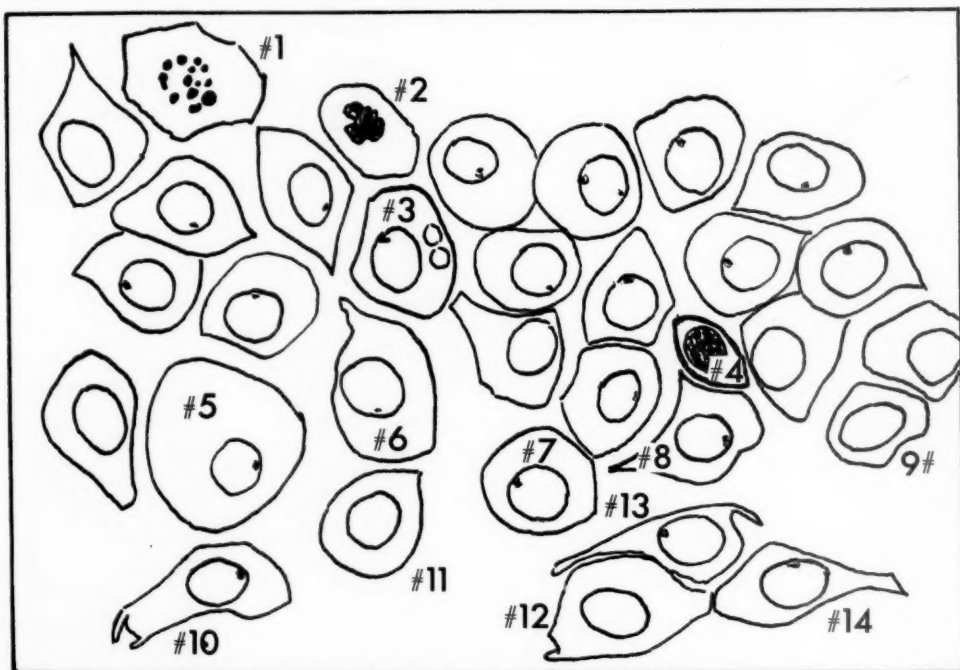
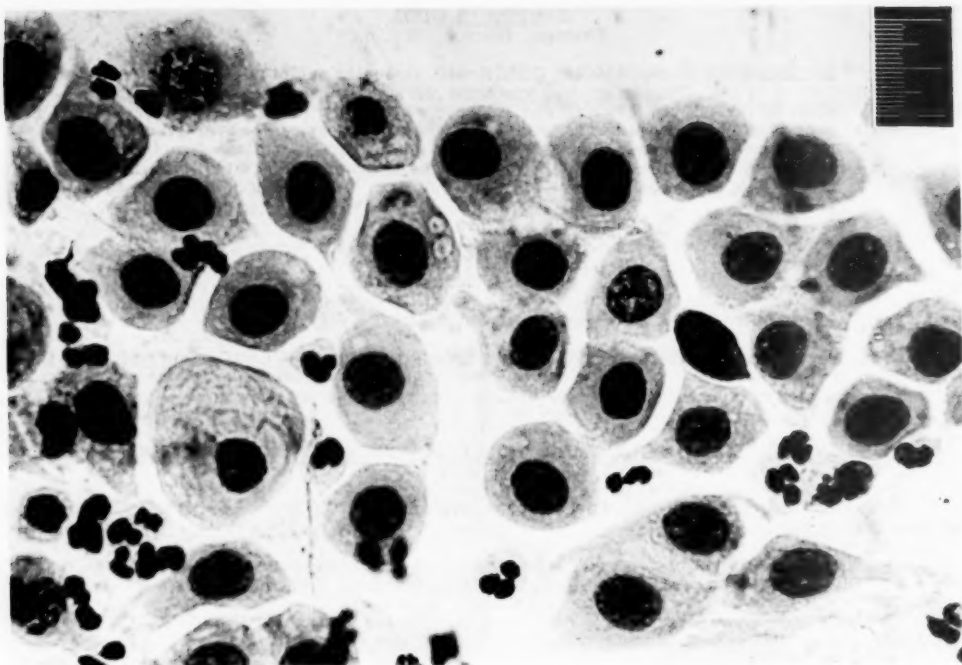


FIG. 12.—Vaginal smear of a 65 year old surgical castrate, 23 years after hysterectomy and bilateral salpingo-oophorectomy. Vaginal flora: mixed bacteria. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: PARABASAL CELLS.

FIGURE 12.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

Terminology: All cells are PARABASAL CELLS
Cell #1: KARYORRHEXIS
Cell #2: IRREGULAR NUCLEAR OUTLINE OF DEGENERATED DARK NUCLEUS
Cell #3: small CYTOPLASMIC VACUOLES
Cell #4: small dark PARABASAL CELL

JEAN BERGER
Basel, Switzerland

Terminology: All cells are PARABASAL CELLS
Cell #1: KARYOLYSIS
Cells #2 - #4: VESICULAR NUCLEI except #4 - HYPERCHROMATIC NUCLEUS

Comments: Typical smear of menopause.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

Terminology: All cells are INNER LAYER BASAL CELLS with the exception of #5 which I consider an OUTER LAYER BASAL CELL because of its increased cytoplasm.
Cell #1: KARYORRHEXIS
Cell #2: Pyknosis in INNER LAYER BASAL CELL
Cell #3: Two VACUOLES in cytoplasm
Cell #4: INNER LAYER BASAL - degenerate nucleus

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

Terminology: All cells are PARABASAL CELLS
Cell #1: KARYORRHEXIS
Cell #2: IRREGULAR NUCLEAR OUTLINE OF DEGENERATED DARK NUCLEUS
Cell #3: SMALL CYTOPLASMIC VACUOLES
Cell #4: is a small dark PARABASAL CELL.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: All cells are PARABASAL CELLS (advanced atrophic smear)

Comments: I would also accept the term BASAL CELLS, indicating that this term applies to ATROPHIC PARABASAL CELLS.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: Cell #1: KARYORRHEXIS
Cell #2: Pyknosis in ATROPHIC SQUAMOUS CELL
Cell #3: ATROPHIC SQUAMOUS CELL with cytoplasmic inclusions
Cell #4: METAPLASTIC SQUAMOUS CELL
Cells #5 & #6: ATROPHIC SQUAMOUS CELLS
Cell #7: ATROPHIC SQUAMOUS CELL with prominent female sex chromatin mass
Cells #8 - #14: ATROPHIC CELLS

Comments: Many of the cells have a prominent female sex chromatin mass lying in proximity to the nuclear membrane.

PETER STOLL
Heidelberg, Germany

Terminology: All cells are PARABASAL CELLS

Cell #1: KARYORRHEXIS
 Cell #2: DEGENERATED NUCLEUS
 Cell #3: CYTOPLASMIC VACUOLES
 Cell #4: May be a CERVICAL PARABASAL CELL (METAPLASTIC ORIGIN) as seen frequently in proliferating process in the ectocervical epithelium

GUILLERMO TERZANO
 Buenos Aires, Argentina

Terminology: PARABASAL CELLS except #5, which should be classified as a DEEP INTERMEDIATE CELL
 Cell #1: KARYORRHEXIS
 Cell #2: an IRREGULAR DEGENERATED NUCLEUS (PYKNOSIS?)
 Cell #3: VACUOLES IN THE CYTOPLASM
 Cell #4: PARABASAL CELL with eosinophilic cytoplasm
 Cell #5: borderline characteristics between a PARABASAL and an INTERMEDIATE
 Cells #6, 8, 10 and 13 show irregular borders (irregularly shaped cells).

GEORGE L. WIED
 Chicago, Illinois, U.S.A.

Terminology: All cells are PARABASAL CELLS
 Cell #1: shows KARYORRHEXIS
 Cell #2: shows IRREGULAR NUCLEAR OUTLINE OF DEGENERATED DARK NUCLEUS
 Cell #3: shows small CYTOPLASMIC VACUOLES
 Cell #4: is a small dark PARABASAL CELL.
 Comments: Slight degenerative autolysis in some of the cells.

HANS KLAUS ZINSER
 Cologne, Germany

Terminology: All cells are PARABASAL CELLS
 Cell #1: KARYORRHEXIS
 Cell #2: signs of PYKNOSIS
 Cell #3: CYTOPLASMIC VACUOLES
 Comments: Some of these cells derived from the upper layers of the parabasal zone since they already exhibit a polyhedral form. However, it is also possible that this polyhedral form is due to artifacts since the cytoplasm is not surrounded by a rigid cellular membrane, so that such cells may exhibit forms as observed in cells #12, 13 and 14.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 12

75 "first preference" votes were cast for terminologies of Figure 12; the following preferences have been expressed, shown here in their individual totals:

22 votes - George N. Papanicolaou and George L. Wied
 11 votes - Hans Klaus Zinser
 10 votes - Guillermo Terzano
 9 votes - J. Ernest Ayre
 8 votes - Peter Stoll
 7 votes - J. Paul Pundel
 3 votes - Jean Berger
 3 votes - Ruth M. Graham
 2 votes - James W. Reagan

As far as conclusions can be drawn from this particular poll, it seems that the majority agree to call the depicted cells PARABASAL CELLS.

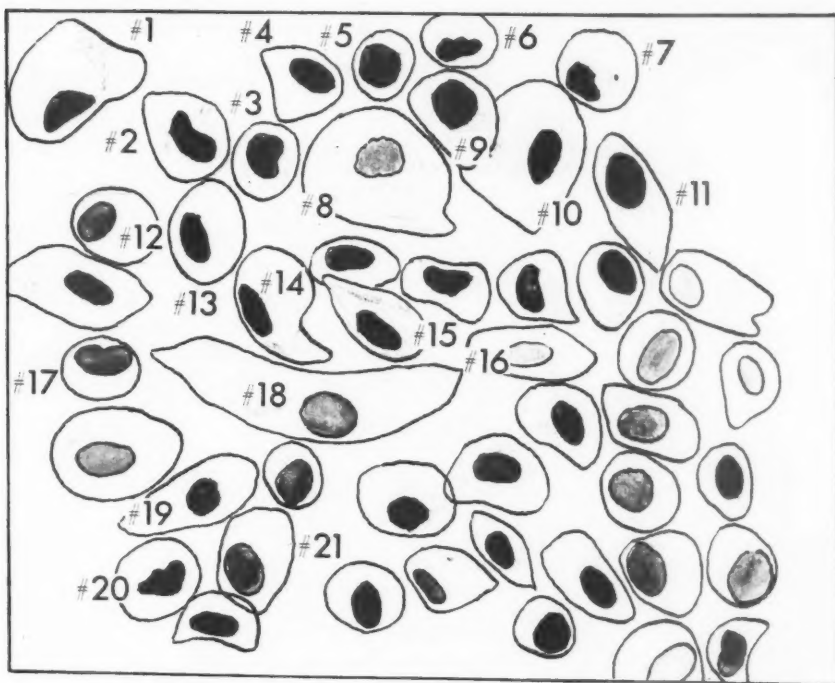
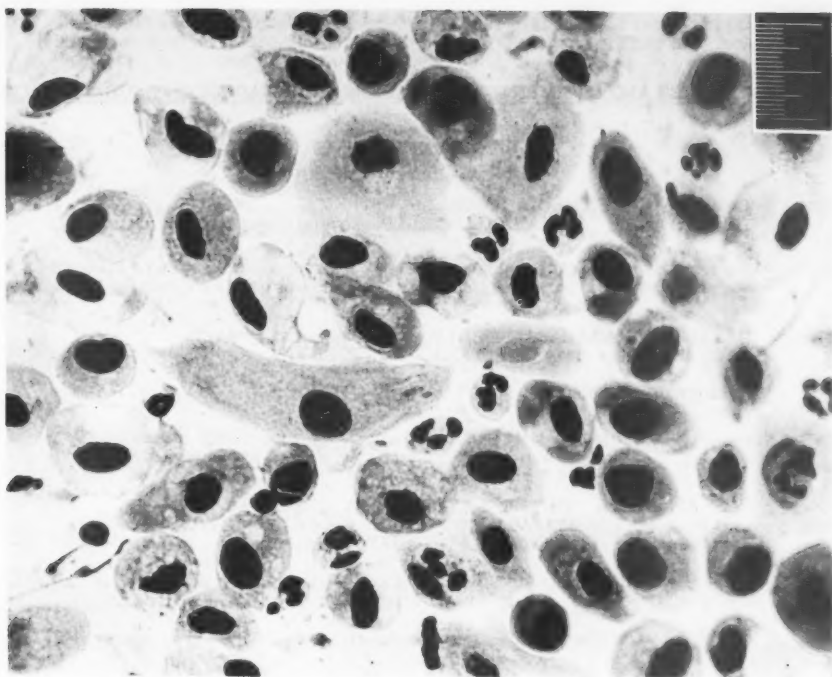


FIG. 13.—Vaginal smear of a 70 year old woman. L.M.P. 27 years ago. Normal senile gynecological findings. Vaginal flora: coccoid bacteria. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: Cell #18: INTERMEDIATE (SQUAMOUS) CELL; the other cells: PARABASAL CELLS.

FIGURE 13.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

Terminology: Cell #18: INTERMEDIATE CELL
All other cells: PARABASAL CELLS showing some atrophic changes

JEAN BERGER
Basel, Switzerland

Terminology: BASAL and PARABASAL CELLS in a menopausal smear
Cells #8 & #18: May be INTERMEDIATE CELLS

Comments: Inflammatory changes.

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

Terminology: Cells #1, 8 & 18: OUTER LAYER BASAL CELLS
Cell #10: INTERMEDIATE SUPERFICIAL CELL
All other cells: INNER LAYER BASAL CELLS

Comments: I consider #18 as an outer layer basal cell because of its shape, which, although it is aberrant, I consider closer to that of an outer layer basal than an intermediate cell.

Cell #10 is considered as an intermediate because of the lower squared-off edge of the cellular outline.

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

Terminology: Cell #18: ELONGATED SQUAMOUS EPITHELIAL CELL probably atypical PARABASAL or INTERMEDIATE
All other cells: PARABASAL CELLS

Comments: Several parabasal cells show degenerative changes. Cell #16 also seems to be a parabasal cell with a lightly staining nucleus, rather than a trichomonad.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #18: INTERMEDIATE SQUAMOUS CELL
All other cells: PARABASAL CELLS (or alternative acceptable terms: ATROPHIC PARABASAL CELLS or just BASAL CELLS)

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: There are METAPLASTIC and ATROPHIC SQUAMOUS CELLS.

PETER STOLL
Heidelberg, Germany

Terminology: All cells are PARABASAL CELLS, most of them showing shrinkage of the nucleus as seen in infection (secondary changes). I would perhaps call #18 a PARABASAL CELL also.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: PARABASAL CELLS, except #18, which might be classified as an INTERMEDIATE CELL.

Comments: The nuclei show different densities. Some look pyknotic and retracted (a pale perinuclear halo remains). #18 and #10 are cells difficult to classify. They both look like parabasal cells soon to become deep intermediate cells.

I cannot make any comment on Cell #16.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Cell #18 (center of photograph): INTERMEDIATE SQUAMOUS CELL
All other cells: PARABASAL CELLS

Comments: Several parabasal cells show degenerative changes. Cell #16 also seems to be a parabasal cell with a lightly staining nucleus, rather than a trichomonad.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: PARABASAL CELLS

Comments: I also classify Cell #18 as a parabasal which simulates the form of an intermediate cell by an extension which is observed in undifferentiated cells.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 13

61 "first preference" votes were cast for terminologies of Figure 13; the following preferences were expressed:

41 of the 61 "first preference" votes were cast for the following terminologies: Cell #18: INTERMEDIATE (SQUAMOUS) CELL; all other cells: PARABASAL CELLS.

6 of the 61 "first preference" votes were cast for terminologies which expressed the view that all depicted cells are PARABASAL CELLS.

6 of the 61 "first preference" votes were cast for the terminology: BASAL and PARABASAL CELLS in a menopausal smear; Cells #8 and #18; may be INTERMEDIATE CELLS.

5 of the 61 "first preference" votes were cast for the terminology: Cell #18, ELONGATED SQUAMOUS EPITHELIAL CELL probably atypical PARABASAL or INTERMEDIATE; all other cells; PARABASAL CELLS.

2 of the 61 "first preference" votes were cast for the terminology: Cells #1, 8 and 18, OUTER LAYER BASAL CELLS; Cell #10, INTERMEDIATE SUPERFICIAL CELL; all other cells, INNER LAYER BASAL CELLS.

1 of the 61 "first preference" votes was cast for the terminology: METAPLASTIC and ATROPHIC SQUAMOUS CELLS.

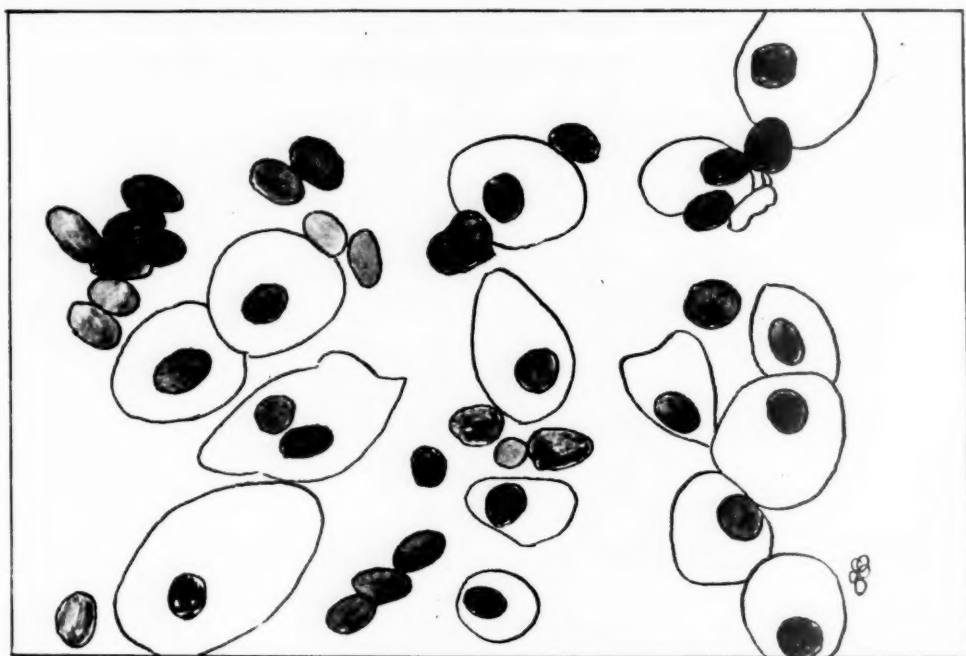
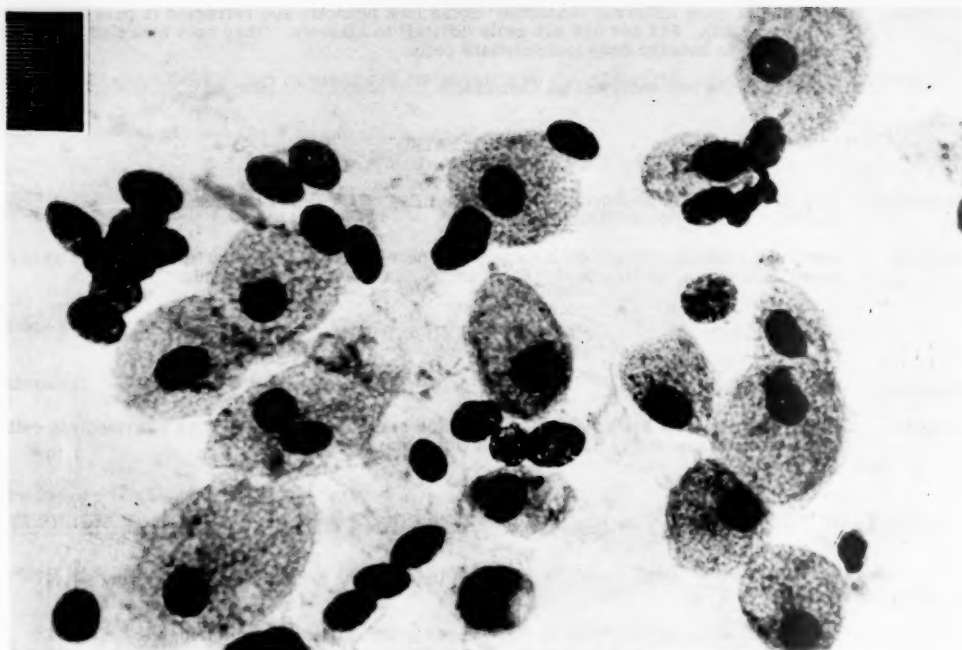


FIG. 14.—Vaginal smear of a 65 year old woman with normal senile gynecological findings. L.M.P. 22 years ago. Vaginal flora: coccoid bacteria. ($20\ \mu$ scale imprinted.)

Suggested Terminology by Preference of the Majority: PARABASAL CELLS, undergoing AUTOLYSIS.

FIGURE 14.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: PARABASAL CELLS

Terminology for this type of cellular lysis: CYTOLYSIS

JEAN BERGER
Basel, Switzerland

Terminology: PARABASAL CELLS with FREE NUCLEI due to AUTOLYSIS

Terminology for this type of cellular lysis: AUTOLYSIS of parabasal cells

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: INNER and OUTER LAYER BASAL CELLS

Terminology for this type of cellular lysis: I do not use any specific terminology but associate this with rather severe atrophy.

Comments: I seriously question whether these cells represent autolysis. They often have active, well-preserved nuclei as in this photomicrograph. I have preferred to consider them as immature basals without fully developed cytoplasm, probably originating very near the basement membrane.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: All cells are PARABASAL CELLS. Some show a TRANSITION to the INTERMEDIATE TYPE. The FREE NUCLEI in the picture are from these cells after AUTOLYSIS.

Terminology for this type of cellular lysis: AUTOLYSIS.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: All cells are PARABASAL CELLS (or alternative term: BASAL CELLS).

Terminology for this type of cellular lysis: AUTOLYSIS

Comments: I agree completely with the comments of Wied.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: ATROPHIC CELLS

Terminology for this type of cellular lysis: These cells are characterized by a delicate vacuolization of the cytoplasm such as may be observed in advanced degeneration. There is cytoplasmic lysis resulting in total dissolution of the cytoplasm of some cells.

PETER STOLL
Heidelberg, Germany

Terminology: PARABASAL CELLS

Terminology for this type of cellular lysis: AUTOLYSIS caused by inflammation.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: PARABASAL CELLS

Terminology for this type of cellular lysis: AUTOLYSIS

Comments: I never thought of a difference between cytolysis and autolysis in smears: For this reason I cannot give my own opinion. Now, after having read the definitions in the terminology program and the good comments of Wied, I am convinced and able to say that I agree with the significance given to the terms "autolysis" (lysis of the parabasal cells) and "cytolysis" (lysis associated with the Döderlein bacillus).

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: All cells are PARABASAL CELLS. The FREE NUCLEI in the picture are from these cells after AUTOLYSIS.

Terminology of this type of cellular lysis: AUTOLYSIS

Comments: Although AUTOLYSIS and CYTOLYSIS indicate, as far as the meaning of the words is concerned, a similar process, I prefer the name AUTOLYSIS to express lysis of parabasal cells, which is often observed in smears of the ATROPHIC TYPE. With the term AUTOLYSIS I imply that there is lysis of parabasal cells which is NOT caused by Döderlein bacilli. On the other hand, I use the term CYTOLYSIS to express lysis of INTERMEDIATE CELLS, which is always associated with the presence of Bacillus vaginalis Döderlein, and which is inhibited immediately if the growth of Döderlein bacilli is inhibited. CYTOLYSIS due to Bacillus vaginalis Döderlein is often increased by parenteral administration of estrogens, whereas AUTOLYSIS disappears after estrogen administration.

I restrict the terms AUTOLYSIS and CYTOLYSIS to reference of squamous epithelial cells. (For terminology concerning lysis of glandular cells, see comments for Figure 21.)

HANS KLAUS ZINSER
Cologne, Germany

Terminology: PARABASAL CELLS

Terminology for this type of cellular lysis: AUTOLYSIS

Comments: This particular form of cellular lysis is not due to bacterial influences as is the one in Figure 15. The cytoplasm is lysed due to other influences here; probably changes in the pH values play a role in this case.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 14

107 "first preference" votes were cast for terminologies of Figure 14; the following preferences were expressed:

98 of 107 "first preference" votes were cast for the following terminology: all cells are PARABASAL CELLS; the type of cellular lysis: AUTOLYSIS.

4 of the 107 "first preference" votes were cast for the terminology: all cells are PARABASAL CELLS; type of cellular lysis: CYTOLYSIS.

3 of the 107 "first preference" votes were cast for the terminology: ATROPHIC CELLS.

2 of the 107 "first preference" votes were cast for the terminology: INNER and OUTER LAYER BASAL CELLS.

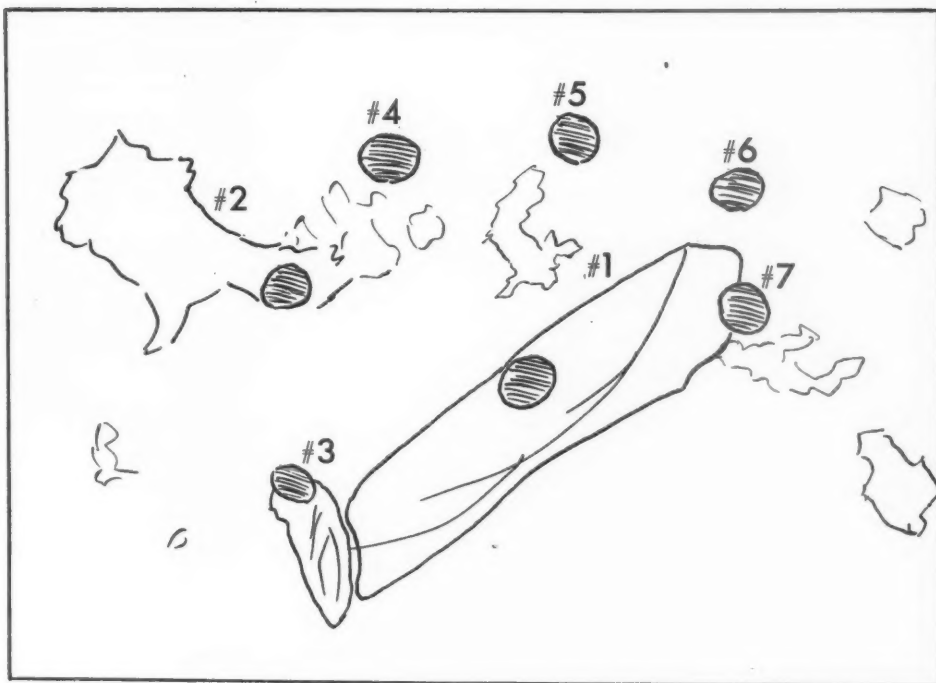
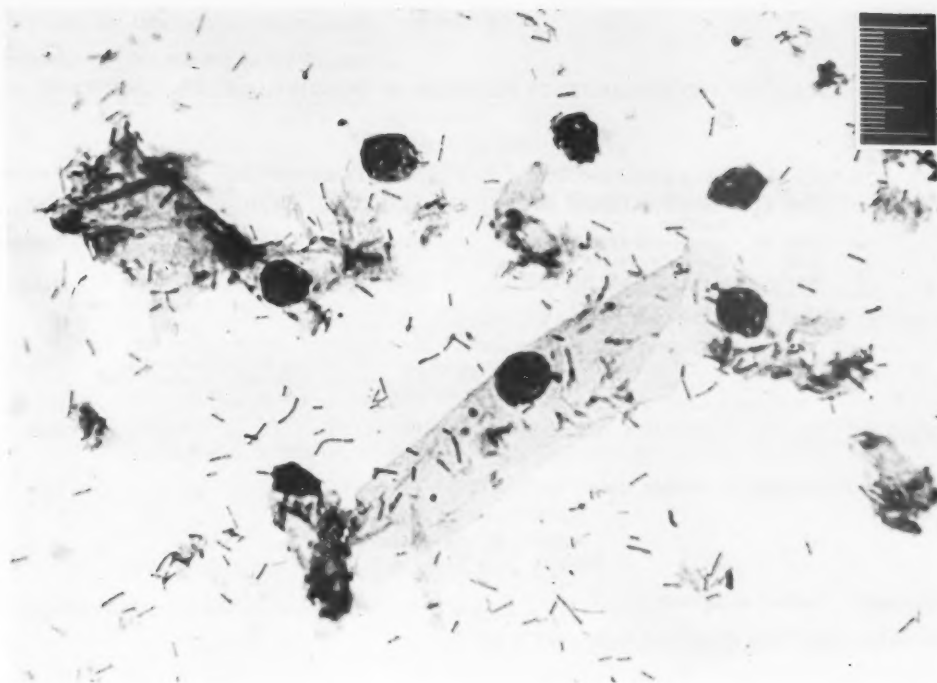


FIG. 15.—Vaginal smear of a 59 year old surgical castrate on long-term estrogen therapy. Hysterectomy and bilateral salpingo-oophorectomy 21 years ago. The patient has been for the past 10 years on oral estrogen therapy: daily 1 mg diethylstilbestrol. Vaginal flora (confirmed by bacterial culture): *Bacillus vaginalis* Doederlein. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: INTERMEDIATE CELLS, undergoing CYTOLYSIS.

FIGURE 15.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS EPITHELIAL CELL containing a vesicular nucleus
Cell #2: same cell type as above, however, already in the process of being cytolysed
Cell #3: Cellular debris with a nucleus
Nuclei #4 - #7: FREE NUCLEI of CYTOLYZED CELLS

Terminology for this type of cellular lysis: CYTOLYSIS

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: INTERMEDIATE SQUAMOUS EPITHELIAL CELL with vesicular nucleus
Cell #2: Same cell type as above, already in the process of being cytolysed

Terminology of this type of cellular lysis: CYTOLYSIS

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: I agree with Wied.

Terminology of this type of cellular lysis: CYTOLYSIS

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL containing a vesicular nucleus
Cell #2: Same cell type as above, however, already in the process of being cytolysed
Cell #3: Cellular debris with a nucleus
Cells #4 - #7: FREE NUCLEI of CYTOLYZED CELLS

Terminology for this type of cellular lysis: CYTOLYSIS

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
The other constituents: CELLULAR DEBRIS and FREE NUCLEI of CYTOLYZED CELLS

Terminology for this type of cellular lysis: CYTOLYSIS

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: Cells #1 & #2: INTERMEDIATE CELLS
Cells #3 - #5: LYSIS of CYTOPLASM

PETER STOLL
Heidelberg, Germany

Terminology: I agree with Wied.

Terminology for this type of cellular lysis: CYTOLYSIS

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cell #1: INTERMEDIATE CELL
Cell #2: INTERMEDIATE rather degenerate CELL (Lysis?)
Cell #3: Degenerate cell
Cells #4 - #7: FREE NUCLEI

Terminology for this type of cellular lysis: CYTOLYSIS

Comments: See comments for Figure 14.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL containing a vesicular nucleus
Cell #2: Same cell type as above, however, already in the process of being cytolyzed
Cell #3: Cellular debris with a nucleus

Terminology of this type of cellular lysis: CYTOLYSIS

Comments: This type of cellular destruction is caused by Döderlein bacilli and can be easily inhibited by bacteriostatic drugs administered locally. For this type of cellular destruction I use the term CYTOLYSIS exclusively to express the cytolytic change due to Döderlein bacilli. The actual words "cytolysis" and "autolysis" indicate a similar process. However, since the two types of cellular destruction have different etiologies, and since they are restricted to different cell types (autolysis: parabasal; cytolysis: intermediate), and finally, since they can be inhibited by different treatments (autolysis: with estrogens; cytolysis: with local bacteriostatic drugs), I would feel one is justified in using different terms for the two types of cellular destruction of squamous cells. (For terminology concerning lysis of glandular cells, see comments for Fig. 21).

HANS KLAUS ZINSER
Cologne, Germany

Terminology: INTERMEDIATE CELLS with vesicular nuclei

Terminology for this type of cellular lysis: CYTOLYSIS

Comments: Characteristic destruction of cytoplasm due to influence of Döderlein bacilli.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 15

107 "first preference" votes were cast on terminologies of Figure 15; the following preferences have been expressed:

89 of the 107 "first preference" votes were cast for the following terminology: the depicted cell is an INTERMEDIATE (SQUAMOUS) CELL; the cellular lysis is: CYTOLYSIS.

7 of the 107 "first preference" votes were cast for the following terminology:

Cell #1: INTERMEDIATE CELL.
Cell #2: INTERMEDIATE, rather degenerate CELL (Lysis?)
Cell #3: degenerate cell.
Cells #4 - #7: FREE NUCLEI.
Type of cellular lysis: CYTOLYSIS.

6 of the 107 "first preference" votes were cast for the terminology:

Cells #1 and #2: INTERMEDIATE CELLS.
Cells #3 - #5: LYSIS of CYTOPLASM.

5 of the 107 "first preference" votes were cast for the terminology:

Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL containing a vesicular nucleus.
Cell #2: Same cell type as above, however, already in the process of being cytolyzed.
Cell #3: Cellular debris with a nucleus.
Cells #4 - #7: FREE NUCLEI of CYTOLYZED CELLS.
Type of cellular lysis: CYTOLYSIS.

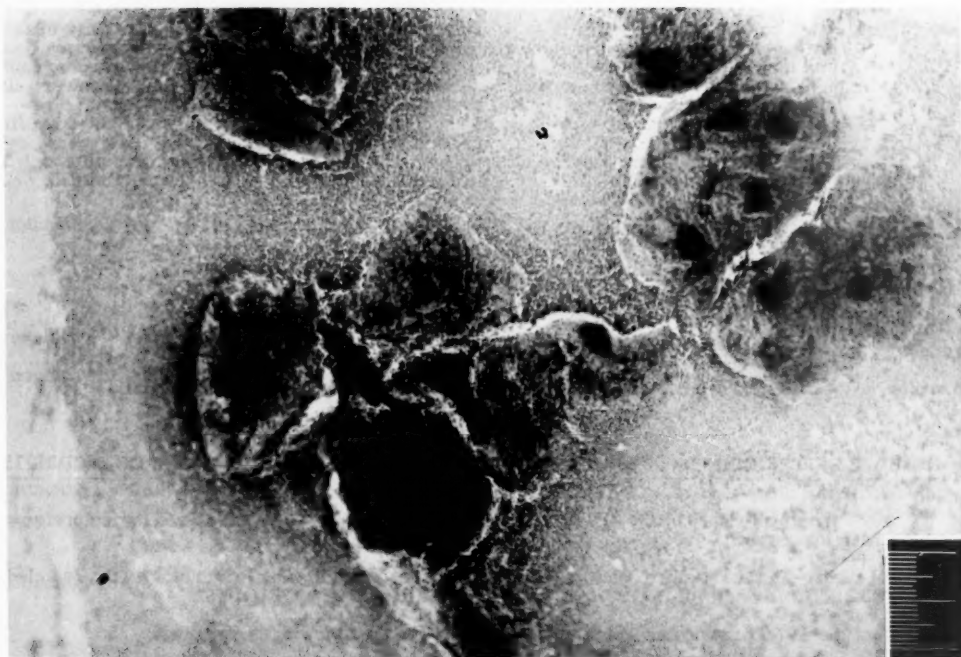


FIG. 16.—Vaginal smear of a 30 year old woman. L.M.P. 9 days ago. Normal gynecological findings. Vaginal flora (confirmed by bacterial culture): streptococci. ($10\ \mu$ scale imprinted.)

Suggested Terminology by Preference of the Majority: SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS surrounded by COCCOID BACTERIA (or COCCI).

FIGURE 16.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S. A.

Terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS exhibiting pyknotic nuclei

Microbiological classification: COCCOID BACTERIA

JEAN BERGER
Basel, Switzerland

Terminology: INFLAMMATORY SUPERFICIAL SQUAMOUS EPITHELIAL CELLS

Comments: Those cellular changes are observed too when the technique is unsatisfactory and the smears are not fixed immediately.

RUTH M. GRAHAM
Buffalo, New York, U.S. A.

Terminology: SUPERFICIAL SQUAMOUS CELLS

Microbiological classification: I agree with the classification of Wied.

GEORGE N. PAPANICOLAOU
New York, New York, U.S. A.

Terminology: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS exhibiting pyknotic nuclei

Microbiological classification: COCCOID BACTERIA

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: SUPERFICIAL SQUAMOUS CELLS

Microbiological classification: COCCOID BACTERIA

Comments: The proper microbiological classification of the vaginal flora is important since cellular changes due to microbiological influences are a source of diagnostic difficulties.

JAMES W. REAGAN
Cleveland, Ohio, U.S. A.

Terminology: SUPERFICIAL SQUAMOUS CELLS

Microbiological classification: There are numerous cocci overlying and about the cells.

PETER STOLL
Heidelberg, Germany

Terminology: SUPERFICIAL CELLS

Microbiological classification: We prefer to use the phase-contrast microscope for classification and differentiate between:

- 1) normal vaginal flora (Döderlein bacilli).
- 2) mixed vaginal flora (Döderlein bacilli and other types of bacteria).

In special cases we report:

- 3) coccoid bacteria.
- 4) trichomonas.
- 5) fungi.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: SUPERFICIAL CELLS

Microbiological classification: COCCI

Comments: A rough classification of the vaginal flora could be:

1. a) Döderlein's Flora I (only Döderlein bacilli, clean smears).
b) Döderlein's Flora II (Döderlein bacilli associated with other bacteria or cocci).
2. Döderlein's Flora III (Döderlein bacilli absent. Bacteria or cocci. Leucocytes and piocytes. Often R. B. C.).
3. Trichomonas vaginalis (bacteria free smears or associated with infection; Leucocytes according to infection).
4. Fungi, yeast-like fungi, especially monilia albicans (candida).

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: SUPERFICIAL SQUAMOUS CELLS exhibiting pyknotic nuclei

Microbiological classification: COCCOID BACTERIA

Comments: The cells are surrounded by abundant coccoid bacteria. I believe that in almost every case a rough classification of the vaginal flora into the following groups can be made: (1) Bacillus vaginalis, (2) Mixed bacteria, (3) Coccoid bacteria, (4) Trichomonads, and (5) Fungi.

In this particular case I would identify this smear as containing SUPERFICIAL SQUAMOUS EPITHELIAL CELLS SURROUNDED BY COCCOID BACTERIA. Further differentiation of coccoid bacteria (e. g. into streptococci or staphylococci) is the province of the bacteriologist.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: SUPERFICIAL CELLS with pyknotic nuclei

Microbiological classification: COCCOID BACTERIA

Comments: In this picture one deals with the coccoid type (Wied, G. L. & Christiansen, W.: Zbl. Bakt. Paras. Infekt. u. Hygiene I, 160:413-422, 1953).

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 16

115 "first preference" votes were cast on terminologies of Figure 16; the following preferences were expressed:

All 115 "first preference" votes were cast in favor of calling all depicted cells SUPERFICIAL (SQUAMOUS, SQUAMOUS EPITHELIAL) CELLS and the surrounding bacterial flora COCCOID BACTERIA or COCCI.

3 of these votes were cast for the terminology which designated that these superficial cells had INFLAMMATORY changes.



FIG. 17.—Vaginal smear of a 27 year old woman, 10 weeks pregnant. Normal gynecological findings. Patient is asymptomatic. Vaginal flora: *Trichomonas vaginalis* and coccoid bacteria. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: TRICHOMONADS and several squamous cells which cannot be properly identified.

FIGURE 17.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: INFLAMMATORY CELL CHANGES (SUPERFICIAL CELLS with perinuclear rarified zone - not halos)

Microbiological classification: TRICHOMONADS

JEAN BERGER
Basel, Switzerland

Terminology: INFLAMMATORY SMEAR

Microbiological classification: TRICHOMONADS

Comments: See comments after Figure 16.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Impossible to distinguish in this photomicrograph

Microbiological classification: TRICHOMONADS

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: It is difficult to decide whether one is dealing here with SUPERFICIAL or INTERMEDIATE CELLS since the apparent pyknosis of the nuclei may be due to inflammatory cell changes. One cell seems to be binucleated. The cells show perinuclear halos often observed in Trichomonas infestations.

Microbiological classification: TRICHOMONADS

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: I agree with the statements by Wied.

Microbiological classification: TRICHOMONADS

Comments: I agree completely with the comments by Wied.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: SUPERFICIAL SQUAMOUS CELLS

Microbiological classification: There are numerous TRICHOMONADS present which preclude hormonal evaluation.

PETER STOLL
Heidelberg, Germany

Terminology: None

Microbiological classification: May be TRICHOMONAS.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Abnormal INTERMEDIATE CELLS with perinuclear halos.

Microbiological classification: **TRICHOMONAS VAGINALIS**

Comments: When there is *Trichomonas vaginalis* infestation it should be pointed out in the report, making it clear that eosinophilia, pyknosis, etc. could have been influenced by the presence of this parasite. A hormonal qualitative determination is never made when the parasite is found in smears, regardless of the number of trichomonads present.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: It is difficult to decide whether one is dealing here with **SUPERFICIAL** or **INTERMEDIATE** cells since the apparent pyknosis of the nuclei may be due to inflammatory cell changes. One cell seems to be binucleated. The cells show perinuclear halos often observed in *Trichomonas* infestation.

Microbiological classification: **TRICHOMONADS**

Comments: It does not seem very important here to distinguish between **INTERMEDIATE** and **SUPERFICIAL** cells since hormonal readings cannot usually be made on smears exhibiting *Trichomonas* infestation.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Predominantly **SUPERFICIAL CELLS** with pyknotic nuclei

Microbiological classification: Probably **TRICHOMONADS** (as far as could be said from the photomicrograph).

Comments: The incidence of *Trichomonas vaginalis* is considerably higher than demonstrated using the usual staining methods. The trichomonads are destroyed by the fast high percentage fixation in alcohol-ether. One can obtain better results using ascending alcohols. On fresh specimens with phasemicroscopy, one can detect *Trichomonads* in 30% of the cases. We distinguish, therefore, between *Trichomonas leukorrhea* without inflammation and the true *Trichomonas vaginitis*. Only in the latter case does one find epithelial cellular changes. Pseudo-eosinophilia and increased occurrence of halo cells are, however, not always formed in cases with *Trichomonas* infestation.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 17

80 "first preference" votes were cast for terminologies of Figure 17; the following first preferences have been expressed:

60 out of 80 "first preference" votes were cast for terminologies by Members of the Terminology Sub-Committee who stated that the definite cell type cannot be determined from the present photomicrograph.

9 votes were cast for terminologies which stated that the cells are **SUPERFICIAL CELLS**.

6 votes were in favor of the term **INFLAMMATORY CELLS**.

5 votes were received for **INTERMEDIATE CELLS**.

The microbiological classification given by all Members of the Terminology Sub-Committee is: apparently **TRICHOMONADS**.

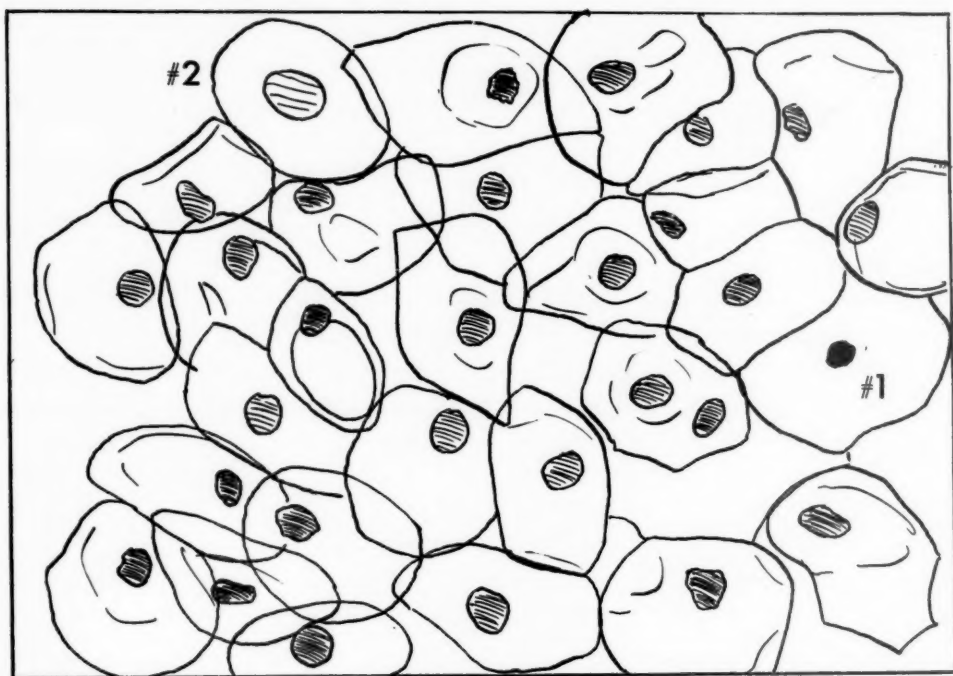
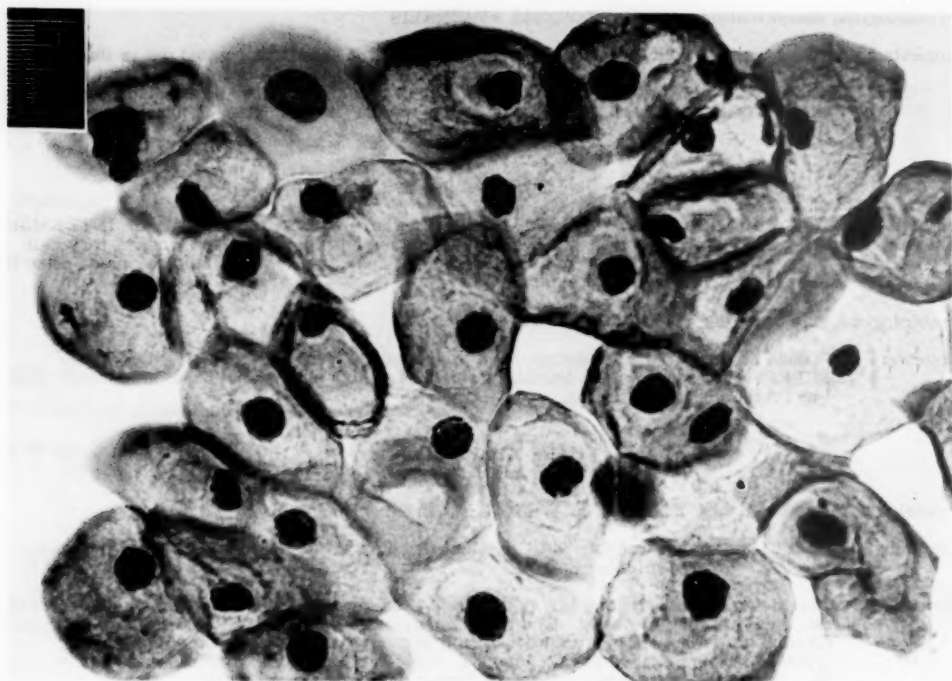


FIG. 18.—Cervical smear of a 31 year old woman. L.M.P. 15 days ago. Colposcopy: ectropion and transformation zones. Histology: epidermization of cervical glands. Vaginal flora: mixed bacteria. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: No definite majority vote obtained. See text for detailed opinions.

FIGURE 18.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: Cell #1: CORNIFIED CELL
Cell #2: LARGE PARABASAL CELL
The other cells: PARABASAL and INTERMEDIATE CELLS

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: SUPERFICIAL CELL
Cell #2: PARABASAL CELL
The other cells: PARABASAL and INTERMEDIATE CELLS

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cell #2: OUTER LAYER BASAL CELL
The other cells: OUTER LAYER BASAL CELLS containing glycogen deposits

Comments: I do not understand the use of the word "metaplastic" in this instance. If it does not refer to the histologic diagnosis but to a change in form, does Wied mean the large vacuole and eccentric nucleus? If that is the case, there are many other outer layer basals with vacuolization and eccentric nuclei which do not contain glycogen deposits. I find this term confusing.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL
Cell #2: LARGE PARABASAL CELL
The other cells: NAVICULAR (INTERMEDIATE) CELLS intermixed with PARABASAL CELLS, indicating a hypertrophic or hyperplastic cervical epithelium. These are apparently filled with glycogen.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
The other cells: MATURE METAPLASTIC CELLS

Comments: Previously I would have called these cells hypertrophic parabasal cells or cervical parabasal cells. Now I would call these intermediate cells MATURE METAPLASTIC CELLS.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cell #2: INTERMEDIATE CELL
The other cells: include many METAPLASTIC CELLS

Comments: The remaining cells include many metaplastic cells. These are from a mature squamous metaplasia rather than an immature type of change. As a result the cells nearly approach the mass of an intermediate cell. Similarly the cytoplasmic changes are indicative of excessive glycogen formation. Cell #2 has a somewhat larger nuclear mass indicating some stimulation in the epithelium. It is an atrophic cell form. This cell has a prominent female sex chromatin mass.

PETER STOLL
Heidelberg, Germany

Terminology: Cell #1: SUPERFICIAL CELL

Cell #2: PARABASAL CELL
The other cells: EROSION CELLS

Comments: These cells derive from a metaplastic portion in the cervical epithelium which is not fully differentiated. From the histological standpoint, we refer to this epithelium as "undifferentiated," having the properties for development into real columnar epithelium or into real squamous epithelium (maybe the surrounding type of chemical milieu degree of pH).

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cell #1: SUPERFICIAL CELL
Cell #2: INTERMEDIATE CELL
The other cells: ECTOCERVICAL CELLS

Comments: If these cells are derived from the epithelium of the ectocervix, I would like to consider #2 as an intermediate cell, because of its size and its nucleus as compared with a superficial cell (#1). I consider myself unable to submit another terminology for these cells. This type of cell has been seen in smears in cases associated with hyperestrogenism. We have never observed such a type of cell in atrophic smears, not even at the beginning of estrogen therapy.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS CELL
Cell #2: LARGE PARABASAL CELL or MATURE METAPLASTIC CELL
The other cells: MATURE METAPLASTIC CELLS

Comments: All cells, except #1 and #2, seem to be ones which are often referred to as hypertrophic parabasal cells (containing glycogen in a rather large vacuole, and often an eccentric nucleus). These cells are found in metaplasia and do not occur in the entirely normal squamous epithelium. The cells of Figure 18 and Figure 19 are both of the same general type. However, in the former the cells seem to be more mature than in the latter. I would prefer the term mature metaplastic cell for these cells to hypertrophic parabasal cells.

"Metaplastic" here means "related to transformation of form" of cell, rather than to the histological diagnosis.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cell #1: SUPERFICIAL CELLS WITH PYKNOTIC NUCLEUS
Cell #2: LARGE PARABASAL CELL
The other cells: CERVICAL PARABASAL CELLS

Comments: I cannot decide definitely to call these cells metaplastic cells. The term metaplasia is only to be used in referring to the transformation of glandular cells into the epithelial forms. Undoubtedly, these above parabasal cells could have derived from a metaplasia. However, it is also quite possible that they derived from poorly differentiated regions of the cervical squamous epithelium.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 18

50 "first preference" votes were cast on terminologies of Figure 18; no definite majority vote has been obtained on this figure and the expressed preferences are shown here for each individual terminology, without summary:

8 votes - Hans Klaus Zinser
7 votes - Jean Berger
7 votes - James W. Reagan
6 votes - George N. Papanicolaou
6 votes - George L. Wied
5 votes - J. Paul Pundel
3 votes - J. Ernest Ayre
3 votes - Ruth M. Graham
3 votes - Guillermo Terzano
2 votes - Peter Stoll

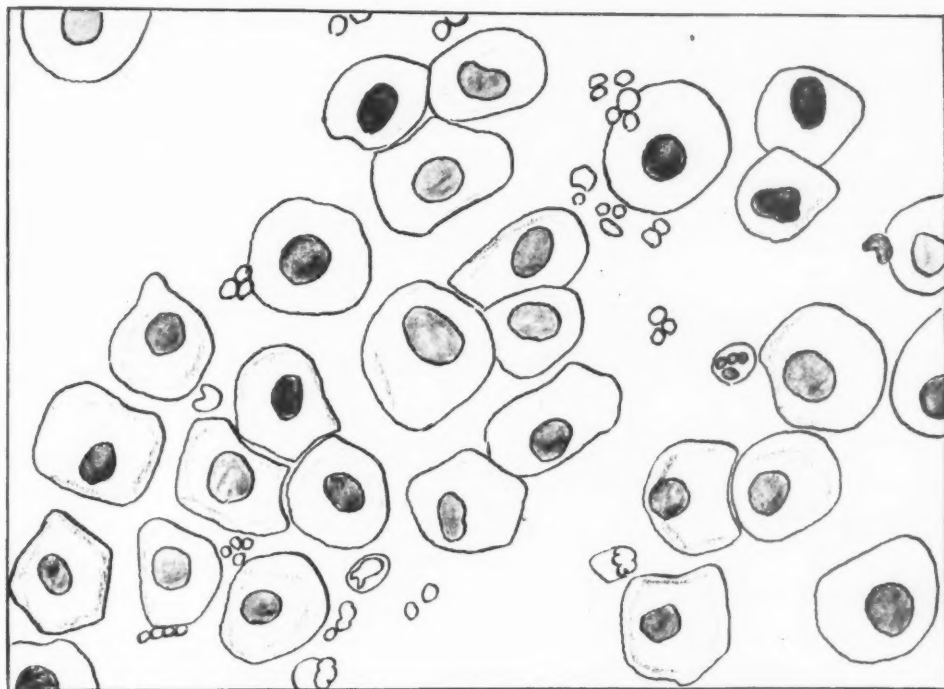
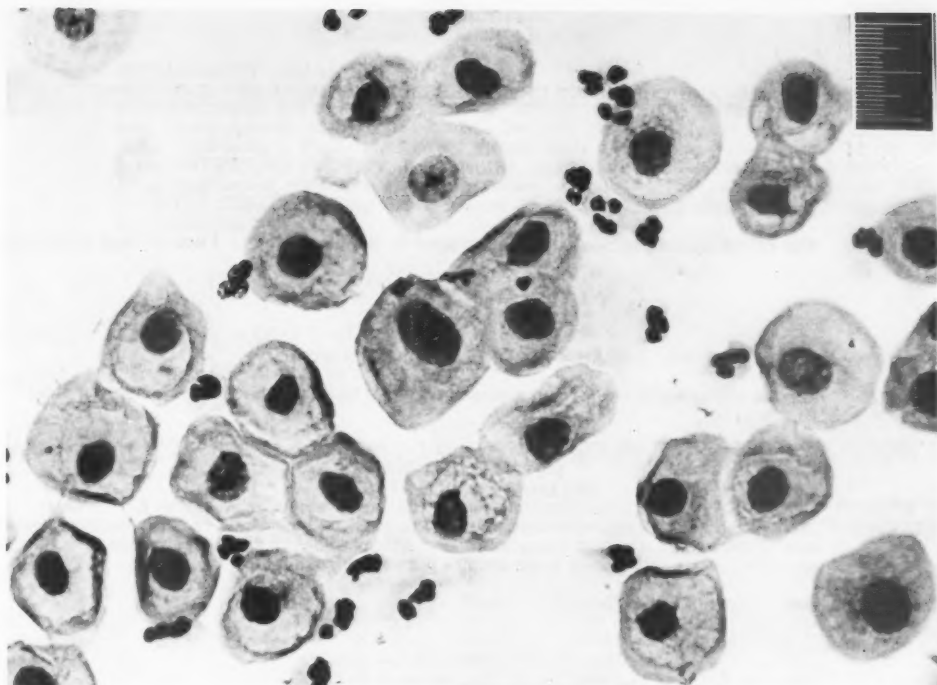


FIG. 19.—Cervical smear of a 38 year old woman. L.M.P. 8 days ago. This cervical smear has been prepared at the same time as the preceding vaginal smear (Fig. 2) of this patient. Colposcopy: transformation zones. Histology: chronic cervicitis and epidermization of cervical glands. Vaginal flora: mixed bacteria. (20μ scale imprinted.)

Suggested Terminology by Preference of the Majority: No definite majority vote obtained. See text for detailed opinions.

FIGURE 19.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U. S. A.

Terminology: PARABASAL CELLS

Comments: The cell diagnosis should not be influenced by tissue findings. I see no cell-metaplasia.

JEAN BERGER
Basel, Switzerland

Terminology: HYPERTROPHIC PARABASAL CELLS with inflammation.

Comments: May be metaplastic cells from a regenerative epithelial zone ("transformation zone" of Hinselmann).

RUTH M. GRAHAM
Buffalo, New York, U. S. A.

Terminology: INNER LAYER BASAL CELLS for the most part. Since there is considerable degeneration in the nuclei, I would consider these cells as showing degenerative changes though admittedly it is difficult to judge from a photomicrograph alone.

Comments: See comments for Figure 15.

GEORGE N. PAPANICOLAOU
New York, New York, U. S. A.

Terminology: PARABASAL CELLS, apparently filled with glycogen, characteristic of a hypertrophic or hyperplastic cervical epithelium.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: IMMATURE METAPLASTIC CELLS (or simply: METAPLASTIC CELLS).

Comments: I am in complete agreement with Wied.

JAMES W. REAGAN
Cleveland, Ohio, U. S. A.

Terminology: METAPLASTIC CELLS

Comments: All cells are metaplastic squamous cells. The cytoplasm is divided into a central more transparent endoplasm and an outer denser ectoplasmic zone. These cells are derived from a more immature type of squamous metaplasia than the cells of Figure 18. There is a suggestion of intercellular bridges between two cells in the lower right hand corner.

PETER STOLL
Heidelberg, Germany

Terminology: EROSION CELLS (UNDIFFERENTIATED TYPE)

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: ECTOCERVICAL CELLS

Comments: Anisokaryosis. See comments for Figure 18.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: METAPLASTIC CELLS

Comments: The cells shown are often referred to as HYPERTROPHIC PARABASAL CELLS. They are, in my opinion, of the same kind as the cells shown in Figure 18, only of smaller size. The cells in Figure 18 are apparently more mature than these cells. To use the term HYPERTROPHIC PARABASAL CELLS for both of them seems rather difficult since they are of considerably different size. I would suggest calling these cells METAPLASTIC CELLS and the cells of Figure 18 MATURE METAPLASTIC CELLS, to differentiate the two.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: CERVICAL PARABASAL CELLS

Comments: See remarks for Figure 18.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 19

49 "first preference" votes were cast on terminologies of Figure 19; no definite majority vote has been obtained on this figure and the expressed preferences are shown here for each individual terminology:

16 votes - METAPLASTIC CELLS
12 votes - PARABASAL CELLS
10 votes - CERVICAL (or ECTOCERVICAL) CELLS
6 votes - HYPERTROPHIC PARABASAL CELLS
3 votes - EROSION CELLS
2 votes - INNER LAYER BASAL CELLS

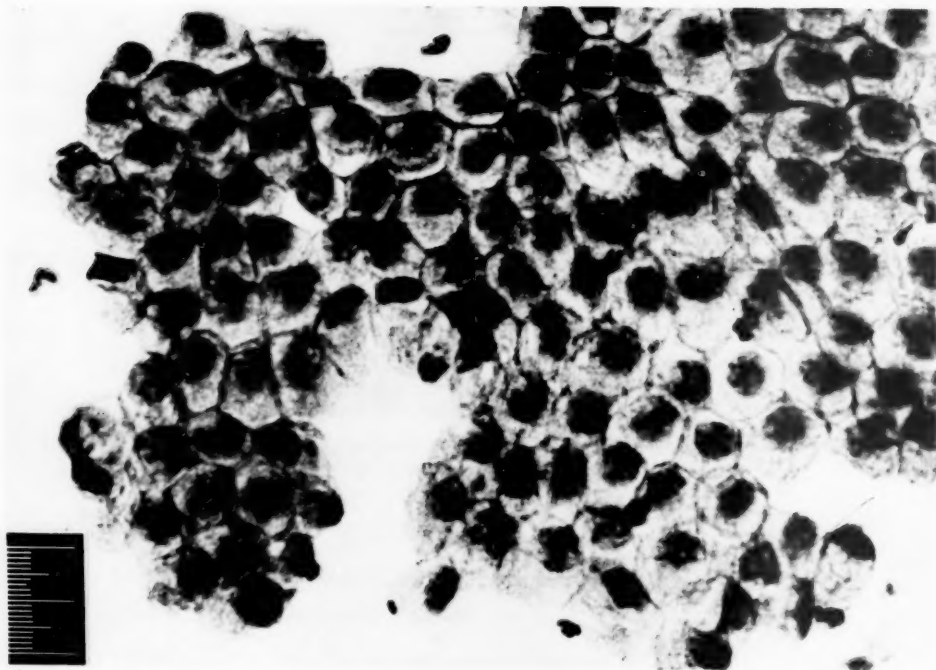


FIG. 20.—Endocervical smear of a 28 year old woman. L.M.P. 14 days ago. Normal gynecological findings. Colposcopy: small ectropion. Vaginal flora: *B. vaginalis* Doederlein. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: ENDOCERVICAL (COLUMNAR) CELLS.

FIGURE 20.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: GLANDULAR TYPE CERVICAL CELLS (normal)
Comments: Sheets of endocervical cells often seen in scrapings from normal cervix.

JEAN BERGER
Basel, Switzerland

Terminology: ENDOCERVICAL CELLS in groups and with cytoplasm.
Comments: The cells are not well fixed.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Sheet of ENDOCERVICAL CELLS

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Sheet of ENDOCERVICAL CELLS, apparently ENDOCERVICAL MUCOID CELLS

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: ENDOCERVICAL COLUMNAR CELLS

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: ENDOCERVICAL COLUMNAR CELLS
Comments: These cells are arranged in a sheet. Their polygonal form indicates that they are viewed on end in many instances.

PETER STOLL
Heidelberg, Germany

Terminology: CERVICAL GLANDULAR CELLS (ENDOCERVICAL MUCOID CELLS)

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: ENDOCERVICAL CELLS
Comments: Sheet of normal, well preserved endocervical mucoid cells with slight variety in shape, no overlapping of the cells with well defined, centrally located or eccentric nuclei.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Sheet of ENDOCERVICAL COLUMNAR CELLS

HANS KLAUS ZINSER
Cologne, Germany

Terminology: ENDOCERVICAL CELLS

Comments: This is a conglomeration of glandular cells from the endocervical epithelium. The cylindric cells are demonstrated predominantly from their basal side, thus causing the appearance of the honeycomb structure.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 20

128 "first preference" votes were cast on terminologies of Figure 20; 112 of the 128 were cast for the following terminology: all cells are ENDOCERVICAL (COLUMNAR) CELLS.

9 of the 128 "first preference" votes were cast for the terminology: CERVICAL GLANDULAR CELLS (ENDOCERVICAL MUCOID CELLS).

7 of the 128 "first preference" votes were cast for the terminology: normal ENDOCERVICAL CELLS, Cell #1: undergoing CYTOLYSIS (traumatic)

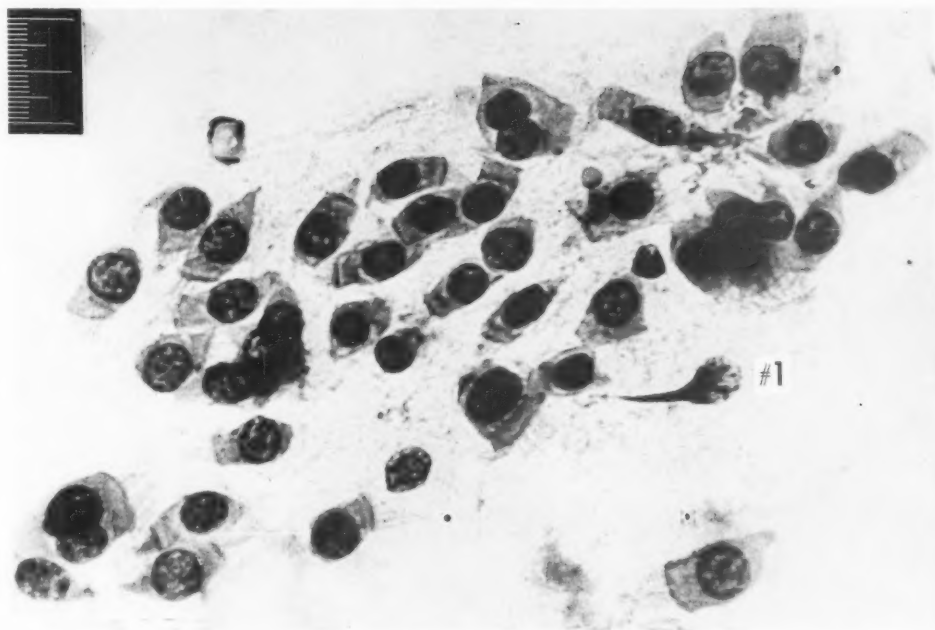


FIG. 21.—Endocervical smear of a 25 year old woman. L.M.P. 14 days ago. Normal gynecological findings. Colposcopy: normal ectocervix. Vaginal flora: mixed bacteria. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: ENDOCERVICAL (COLUMNAR) CELLS.

FIGURE 21.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: normal ENDOCERVICAL CELLS
Cell #1: Undergoing cytolysis (traumatic)

JEAN BERGER
Basel, Switzerland

Terminology: ENDOCERVICAL CELLS, with visible CILIA

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: ENDOCERVICAL CELLS, CILIATED

Comments: I use the term FREE nuclei, rather than stripped nuclei.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: ENDOCERVICAL CELLS, most of them CILIATED
Cell #1: Stripped nucleus of an endocervical ciliated cell with a characteristic knob-like protrusion.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: ENDOCERVICAL COLUMNAR CELLS, most of them CILIATED
Cell #1: STRIPPED NUCLEUS

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: ENDOCERVICAL COLUMNAR CELLS

Comments: Many of these forms are distinctly columnar in shape although some are truncated prismatic forms indicating their origin from a curved surface. The basal granules are distinct beneath the free border of many cells. Cilia are also present in some cells. In many of the nuclei there is a prominent female sex chromatin mass. One cell is binucleate.

PETER STOLL
Heidelberg, Germany

Terminology: CERVICAL GLANDULAR CELLS, some of them exhibiting degeneration of the cytoplasm with resting of FREE NUCLEI

Comments: I am not sure if one can differentiate morphologically free nuclei of basal-parabasal cells from free nuclei of endocervical cells or if one can differentiate these only by the presence of other more or better preserved cells of a particular type.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: ENDOCERVICAL CELLS

Comments: As I did for cytolysis and autolysis (Figures 14 and 15) I also agree with the terms STRIPPED NUCLEUS and FREE NUCLEUS when there is lysis of columnar cells. It may be that in the smear cilia of some of the cells could be seen.

GEORGE L. WIED
Chicago, Illinois, U. S. A.

Terminology: ENDOCERVICAL COLUMNAR CELLS, most of them CILIATED
Cell #1: STRIPPED NUCLEUS (degenerated)

Comments: For free nuclei of cells from the glandular epithelium I prefer the term STRIPPED NUCLEI, rather than the terms CYTOLYSIS or AUTOLYSIS, which I restrict to squamous cell lysis. This difference in terminology for cell destruction is mainly useful for immediate identification in the laboratory.

HANS KLAUS ZINSER
Cologne, Germany

Terminology: ENDOCERVICAL CELLS
Cell #1: Extended nucleus of a cylindric cell.

Comments: When dealing with mucus producing cells of the uterine cervix one often finds free nuclei which appear because of the mucus secretion. The cell, so to speak, loses its cytoplasm. It is, therefore, not an autolytic process, but a process which is caused by the cellular function. I do not have a special name for this process resulting in liberation of free nuclei.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 21

106 "first preference" votes were cast for terminologies of Figure 21; the following preferences were indicated:

103 of 106 "first preference" votes were cast in favor of the following terminology: all cells are ENDOCERVICAL (COLUMNAR) CELLS.

3 of the 106 "first preference" votes were cast for the terminology: all cells are CERVICAL GLANDULAR CELLS, some of them exhibiting degeneration of the cytoplasm with resting of FREE NUCLEI.

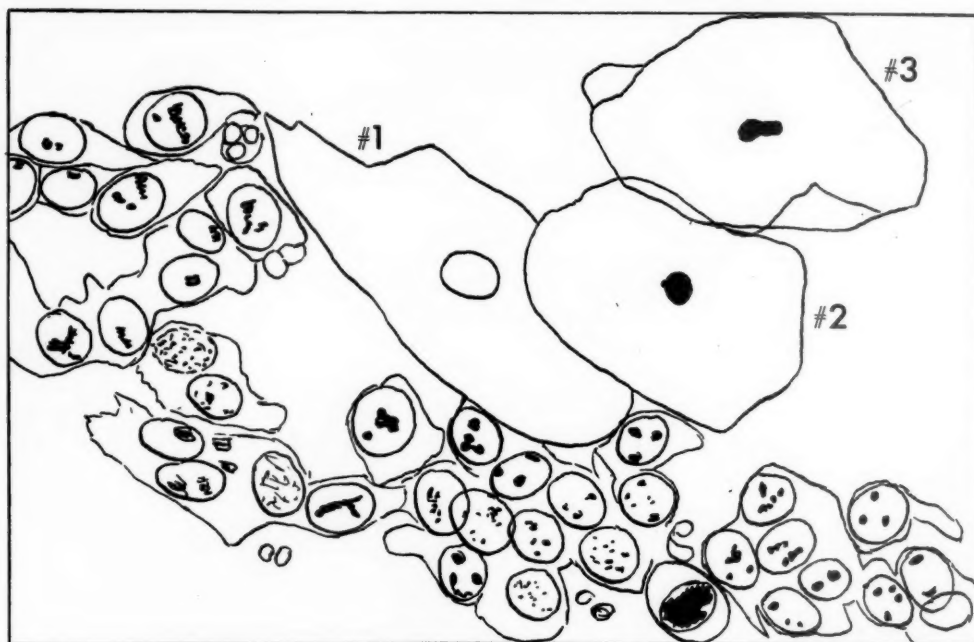
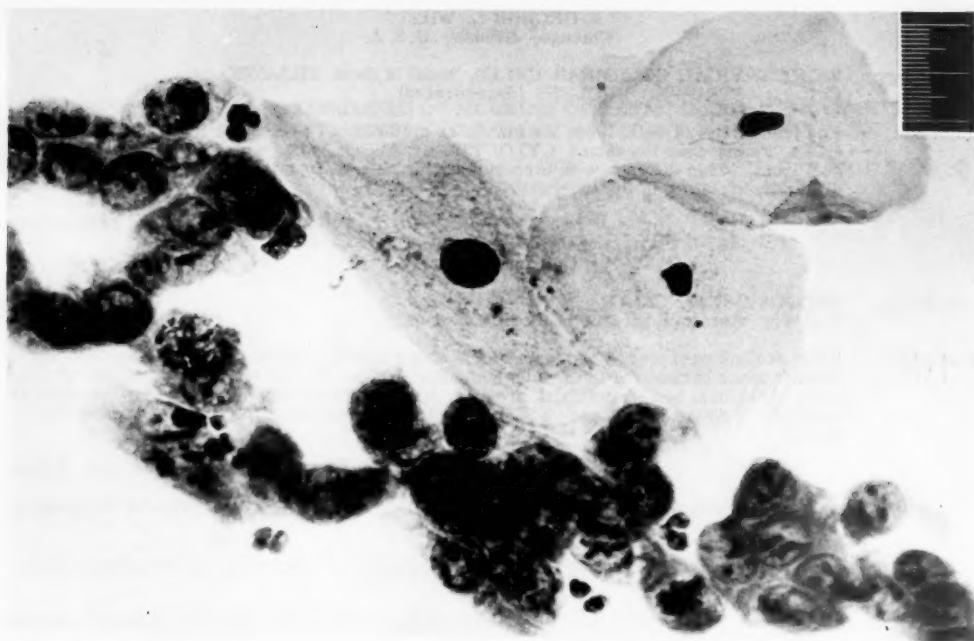


FIG. 22.—Cervical smear of a 28 year old woman. L.M.P. 15 days ago. Normal gynecological findings. Colposcopy: normal ectocervix. Cervical biopsy: mild cervicitis. Healthy vaginal flora. ($20\ \mu$ scale imprinted.)

Suggested Terminology by Preference of the Majority: No definite majority vote obtained. See text for detailed opinions.

FIGURE 22.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: Cell #1: INTERMEDIATE CELL
Cells #2 & #3: CORNIFIED CELLS
The other cells: HYPERACTIVE GLANDULAR CERVICAL CELLS commonly seen in chronic cervicitis.

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: INTERMEDIATE SQUAMOUS EPITHELIAL CELL showing vesicular nucleus
Cells #2 & #3: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS with pyknotic nuclei
The other cells: HISTIOCYTES, deriving from inflammatory endocervical tissue.

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
Cells #2 & #3: SUPERFICIAL SQUAMOUS CELLS
The other cells: ACTIVE ENDOCERVICAL CELLS

Comments: It should be remembered that mitotic figures are fairly common in desquamated columnar cells. For example, they are seen fairly frequently, in benign desquamated columnar cells from the gastric mucosa. The tags of cytoplasm and lack of definite cell walls suggest endocervical cells rather than histiocytes.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL, with a vesicular nucleus
Cells #2 & #3: SUPERFICIAL SQUAMOUS EPITHELIAL CELLS with pyknotic nuclei
The other cells: ENDOCERVICAL CELLS with nuclei indicating active proliferation and growth.

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
Cells #2 & #3: SUPERFICIAL SQUAMOUS CELLS
The other cells: As far as one can state from the photograph I believe that one deals here with HYPERPLASTIC ENDOCERVICAL CELLS (note three large nucleoli in some of the cells). Histiocytes usually show a normal nucleolus.

Comments: I agree with the comments of Wied concerning the exact differential diagnosis.

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: Cell #1: INTERMEDIATE CELL
Cells #2 & #3: SUPERFICIAL SQUAMOUS CELLS
The other cells: Probably REGENERATING ENDOCERVICAL CELLS

Comments: The nuclear changes indicate intense stimulation of the epithelium as to the mitoses. The cells are arranged for the most part in a sheet indicating that the intercellular substance has not been disturbed. The re-epithelialization of a minute ulcer might produce cells of this type.

PETER STOLL
Heidelberg, Germany

Terminology: Cell #1: INTERMEDIATE CELL
Cells #2 & #3: SUPERFICIAL CELLS

The other cells: I would believe they are HISTIOCYTES, because in one cell one sees mitosis which, in my opinion, is very uncommon in endocervical cells.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cell #1: INTERMEDIATE CELL
Cells #2 & #3: SUPERFICIAL CELLS
The other cells: May be either HYPERACTIVE ENDOCERVICAL CELLS or HISTIOCYTES.

Comments: In this cluster it is easy to recognize abnormal features: anisokaryosis, active eccentric nuclei in some cells, prominent nucleoli, remarkable variation in amount of cytoplasm, etc. Though not absolutely sure, I feel these are hyperactive endocervical cells rather than histiocytes since we know it is a smear taken at the 15th day of the cycle from a 28-year-old woman having cervicitis.

It has been said that "one of the problems to confront the beginner is the distinction between histiocytes and columnar epithelial cells." The difficulty still remains for me, especially when the cells do not show columnar shape. Fortunately, in practice, the general pattern of the slide facilitates a correct diagnosis.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL containing a characteristic vesicular nucleus
Cells #2 & #3: SUPERFICIAL SQUAMOUS CELLS containing characteristic pyknotic nuclei
The other cells: Either ACTIVE ENDOCERVICAL CELLS or HISTIOCYTES.

Comments: I am not sure whether we are dealing here with endocervical cells or with histiocytes. Mitoses are more commonly seen in histiocytes than in endocervical cells. (This particular patient was observed over a long period of several years; the depicted cells recurred usually at the time of maximal estrogenic effect on the vaginal epithelium. Repeated histology did not show the origin of these cells.)

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cell #1: SUPERFICIAL CELL with vesicular nucleus
Cells #2 & #3: SUPERFICIAL CELLS with pyknotic nuclei
The other cells: HISTIOCYTES OR ENDOCERVICAL CELLS

Comments: The final differentiation cannot be made from the photomicrograph. Despite the mitosis, I would believe that one deals here with endocervical cells.

TERMINOLOGY OF PARTICIPANTS IN THE OPINION POLL WHICH DIFFERED FROM THE
SUGGESTIONS OF THE TERMINOLOGY SUB-COMMITTEE ON PHOTOMICROGRAPHS

HORST SMOLKA
Kiel, Germany

Terminology: Cell #1: INTERMEDIATE CELL
Cells #2 & #3: SUPERFICIAL CELLS
The other cells: HYPERACTIVE GLANDULAR CERVICAL CELLS as often seen in chronic cervicitis

Comments: The abundance and especially the variation of the nucleoli and the lack of kidney-shaped nuclei are uncommon for histiocytes.

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 22

68 "first preference" votes were cast for terminologies of Figure 22; the individual votes are presented here without summary:

19 votes - Guillermo Terzano and George L. Wied
9 votes - J. Paul Pundel
8 votes - James W. Reagan
8 votes - Hans Klaus Zinser
7 votes - Ruth M. Graham
6 votes - Peter Stoll
5 votes - George N. Papanicolaou
3 votes - J. Ernest Ayre
3 votes - Jean Berger

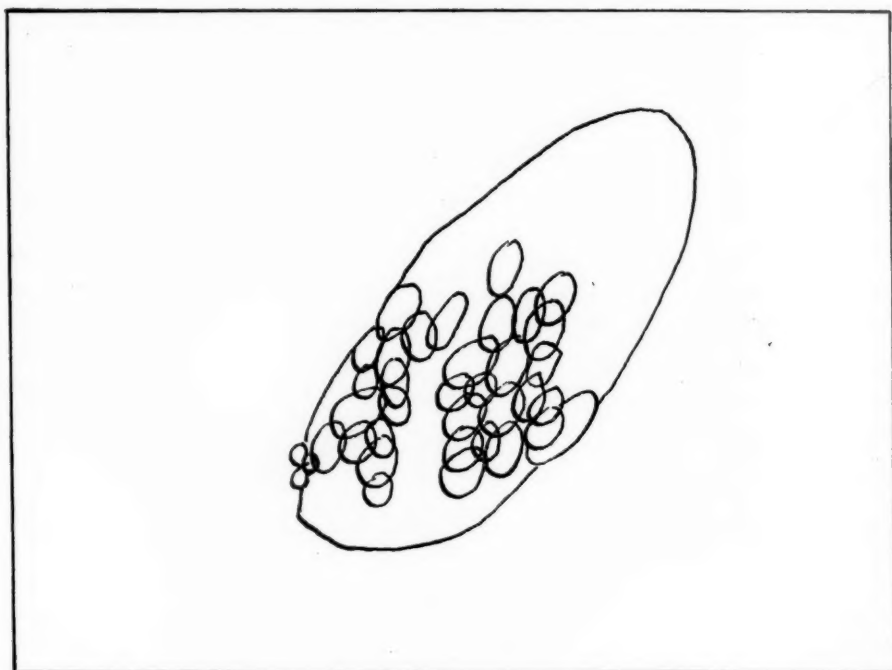


FIG. 23.—Cervical smear of a 31 year old woman. L.M.P. 20 days ago. Colposcopy: transformation zones. Cervical biopsy: chronic cervicitis and epidermization of cervical glands. Vaginal flora: mixed bacteria. (20 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: MULTINUCLEATED GIANT CELL.

FIGURE 23.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: MULTINUCLEATED GIANT CELL (HISTIOCYTE)

JEAN BERGER
Basel, Switzerland

Terminology: GIANT CELL with inclusion of phagocytozed nuclei: HISTIOCYTE

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: FOREIGN BODY GIANT CELL

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: MULTINUCLEATED GIANT CELL (HISTIOCYTE)

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: MULTINUCLEATED GIANT CELL (HISTIOCYTE)

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: MULTINUCLEATED GIANT CELL

PETER STOLL
Heidelberg, Germany

Terminology: MULTINUCLEATED GIANT CELL

Comments: I wonder that this cell should always be a "histiocyte."

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: MULTINUCLEATED GIANT CELL (HISTIOCYTE)

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: MULTINUCLEATED GIANT CELL (HISTIOCYTE)

HANS KLAUS ZINSER
Cologne, Germany

Terminology: MULTINUCLEATED GIANT CELL (HISTIOCYTE)

Comments: One might well regard this cell as a true giant cell. Occasionally such features can also be observed by conglomeration of many, mostly undifferentiated epithelial cells.

TERMINOLOGY OF PARTICIPANTS IN THE OPINION POLL WHICH DIFFERED FROM THE
SUGGESTIONS OF THE TERMINOLOGY SUB-COMMITTEE ON PHOTOMICROGRAPHS

VIOLETTE M. NUOVO
Paris, France

Terminology: HISTIOCYTIC SYNCTIUM

RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 23

135 "first preference" votes were cast on terminologies of Figure 23; the following preferences were expressed:

124 of the 135 votes were cast in favor of calling the depicted cell a MULTINUCLEATED GIANT CELL.

The terminology FOREIGN BODY GIANT CELL received 6 votes, and the terminology GIANT CELL (HISTIOCYTE) received 5 votes.

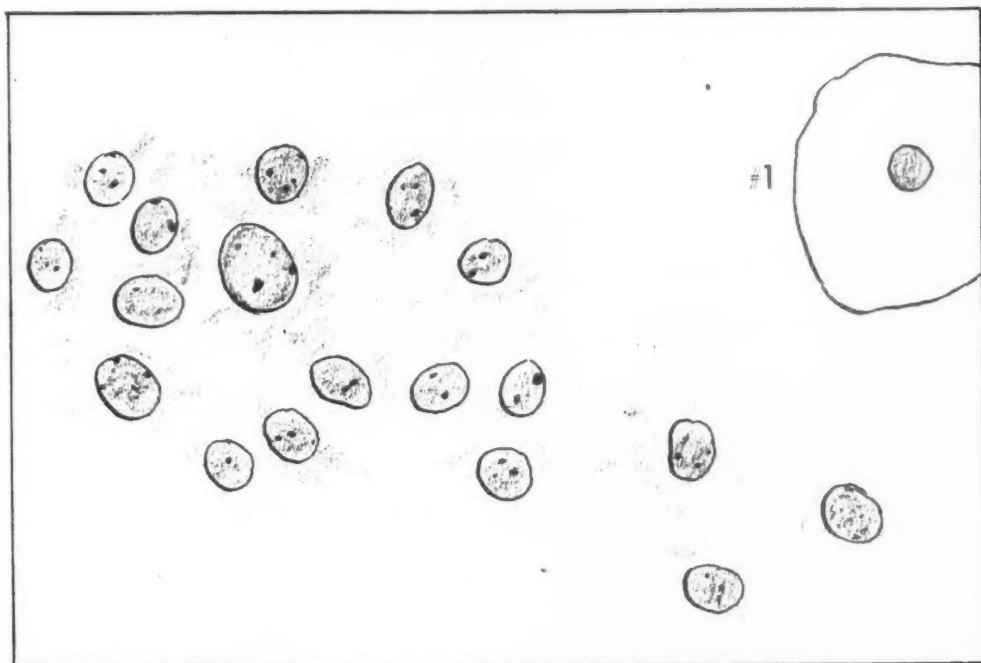
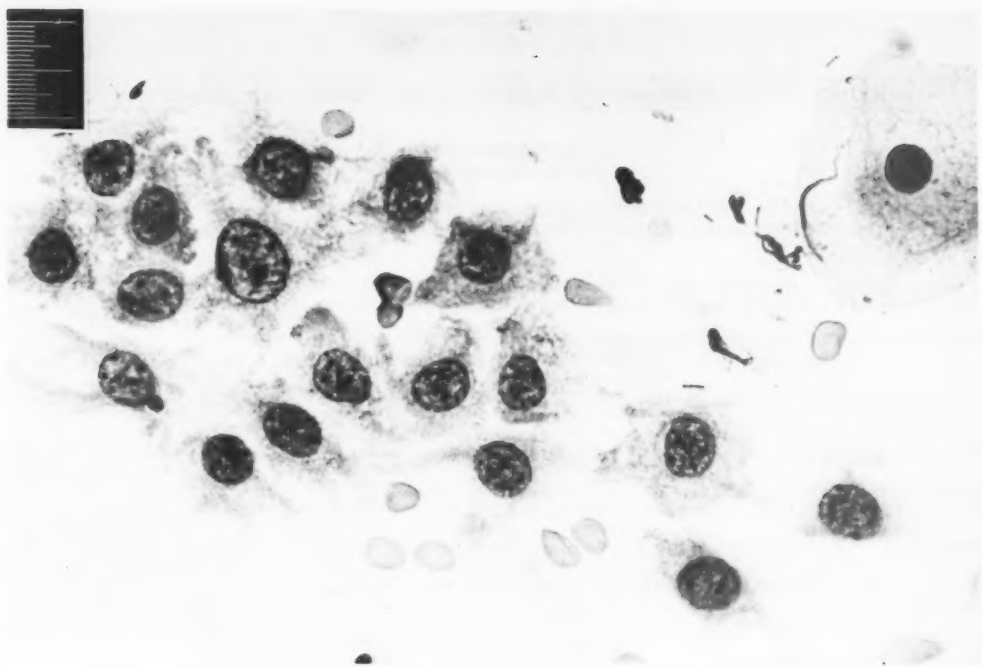


FIG. 24.—Endocervical smear of a 26 year old woman. L.M.P. 14 days ago. Normal gynecological findings. Colposcopy: normal ectocervix. Cervical biopsy: chronic cervicitis. Vaginal flora: coccoid bacteria. (10 μ scale imprinted.)

Suggested Terminology by Preference of the Majority: Cell #1: INTERMEDIATE (SQUAMOUS) CELL; the other cells: HISTIOCYTES.

FIGURE 24.

TERMINOLOGIES AND COMMENTS OF MEMBERS OF TERMINOLOGY SUB-COMMITTEE:

J. ERNEST AYRE
Miami, Florida, U.S.A.

Terminology: Cell #1: INTERMEDIATE CELL
The other cells: ENDOCERVICAL CELLS (probably) with possible metaplastic changes.

JEAN BERGER
Basel, Switzerland

Terminology: Cell #1: INTERMEDIATE, rather than SUPERFICIAL CELL.
The other cells: HISTIOCYTES with many nucleoli or INFLAMMATORY ENDOCERVICAL CELLS

RUTH M. GRAHAM
Buffalo, New York, U.S.A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
The other cells: ENDOCERVICAL CELLS

Comments: As indicated for Figure 22, histiocytes should have definite cytoplasmic borders. These cells have a background of indefinite cytoplasm suggesting endocervical cells. The variation in size of the nuclei also suggests endocervical cells.

GEORGE N. PAPANICOLAOU
New York, New York, U.S.A.

Terminology: Cell #1: SUPERFICIAL SQUAMOUS EPITHELIAL CELL containing a vesicular nucleus
All other cells: HISTIOCYTES and a few ERYTHROCYTES

J. PAUL PUNDEL
Luxembourg, Luxembourg

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
All other cells: HISTIOCYTES

JAMES W. REAGAN
Cleveland, Ohio, U.S.A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL
The other cells are derived from the endometrial or endocervical stroma and in a sense are HISTIOCYTES. They are not uncommon at this time in the cycle.

PETER STOLL
Heidelberg, Germany

Terminology: Cell #1: INTERMEDIATE CELL
The other cells: HISTIOCYTES with foamy cytoplasm.

GUILLERMO TERZANO
Buenos Aires, Argentina

Terminology: Cell #1: INTERMEDIATE CELL
The other cells: HISTIOCYTES

Comments: The other cells could be, as in the case of Figure 22, endocervical cells or histiocytes. Because of ill-marked limits and rather foamy cytoplasm, I would dare call these histiocytes.

GEORGE L. WIED
Chicago, Illinois, U.S.A.

Terminology: Cell #1: INTERMEDIATE SQUAMOUS CELL containing a vesicular nucleus
All other cells: HISTIOCYTES and a few ERYTHROCYTES

HANS KLAUS ZINSER
Cologne, Germany

Terminology: Cell #1: SUPERFICIAL CELL with vesicular nucleus
The other cells: UNDIFFERENTIATED EPITHELIAL CELLS (METAPLASTIC CELLS)
or HISTIOCYTES

Comments: These cells could be immature cells of a metaplasia (epitheloid cells). As far as one could judge from the photomicrograph, these cells are not histiocytes. The size of the nuclei speaks for the metaplastic cells.

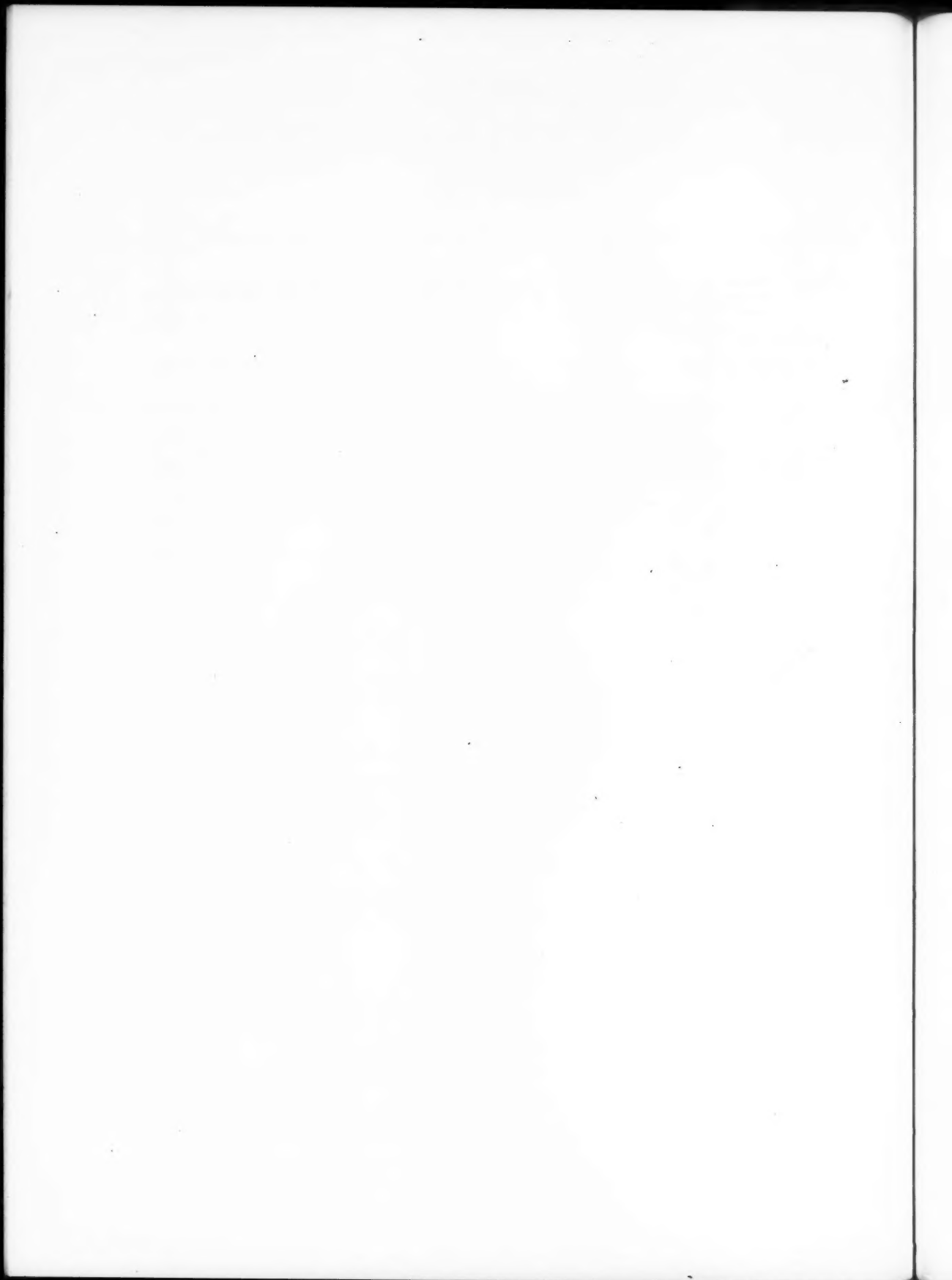
RESULTS OF THE OPINION POLL AMONG 30 CYTOLOGISTS ON TERMINOLOGY OF FIGURE 24

58 "first preference" votes were cast on terminologies of Figure 24; the following preferences were expressed:

48 of the 58 "first preference" votes were given to terminologies which stated that Cell #1 is an INTERMEDIATE CELL, whereas 10 votes were given to terminologies that stated that Cell #1 is a SUPERFICIAL CELL.

48 out of 58 "first preference" votes were given to terminologies which stated that the other cells are HISTIOCYTES, whereas 6 votes were cast for terminologies which stated that these cells are ENDOCERVICAL CELLS.

The terminology which stated that these cells may be either UNDIFFERENTIATED EPITHELIAL (METAPLASTIC) CELLS or HISTIOCYTES received 4 votes.



CYTOLOGICAL REPORTS

THEIR IMPLICATIONS IN CANCER, HORMONAL, AND MICROBIOLOGICAL SCREENING AS EVALUATED BY 22 CLINICIANS

In order to get an impression of what the specialist wishes to learn from the cytology laboratory and how this information is used by him in the management of the patient, ACTA CYTOLOGICA has submitted a questionnaire to several specialists.

The names of the 22 contributors to this questionnaire are as follows:

ANTHONY FRANCIS ANDERSON of Edinburgh, Scotland, U. K.
TASSILO ANTOINE of Vienna, Austria.
JOSÉ BOTELLA LLUSIA of Madrid, Spain.
FRANCIS BAYARD CARTER of Durham, North Carolina, U. S. A.
M. EDWARD DAVIS of Chicago, Illinois, U. S. A.
EMERSON DAY of New York, New York, U. S. A.
PAUL FUNCK-BRENTANO of Paris, France.
JOHN B. GRAHAM of Buffalo, New York, U. S. A.
THEODOR KOLLER of Basel, Switzerland.
KASUMASU MASUBUCHI of Tokyo, Japan.
JOE VINCENT MEIGS of Boston, Massachusetts, U. S. A.
ARNALDO de MORAES of Rio de Janeiro, Brazil.
ERNST NAVRATIL of Graz, Austria.
J. PAUL PUNDEL of Luxembourg, Luxembourg.
ABRAHAM E. RAKOFF of Philadelphia, Pennsylvania, U. S. A.
HANS RUNGE of Heidelberg, Germany.
LEWIS C. SCHEFFEY of Philadelphia, Pennsylvania, U. S. A.
HERBERT F. TRAUT of San Francisco, California, U. S. A.
HUBERT de WATTEVILLE of Geneva, Switzerland.
STANLEY WAY of Newcastle-Upon-Tyne, England, U. K.
HANS ZACHERL of Vienna, Austria.
HANS KLAUS ZINSER of Cologne, Germany.

The questionnaire was subdivided into four parts:

- I Cancer Screening
- II Hormonal Evaluation
- III Microbiological Evaluation
- IV Other Requests

Each contributor was asked to answer the questions with a "yes" or "no" and was also invited to make comments. Comments have been edited where necessary. The name of the actual contributor of any given answer is not disclosed. Conclusions have been drawn at the end of each question where possible, and are graphically represented. For the interest of the readers, a cytological report form has been compiled, based on the results of the questionnaire. It is emphasized, however, that the results of the questionnaire are not in any way to be regarded as a conclusive poll of clinicians' opinions, as the number of contributors is small, and different results might be obtained from another 22 clinicians.

It is the purpose of the questionnaire, however, to stimulate discussion on the subjects concerned. Comments or different opinions are invited in the form of Letters to the Editor.

I. CANCER SCREENING

QUESTION 1: WHAT TYPE OF CYTOLOGICAL REPORT DO YOU PREFER WITH REGARD TO CANCER SCREENING?

- A. Negative, positive, doubtful, or
- B. Class I, Class II, Class III, Class IV, Class V.

ANSWERS:

- | | | |
|--------|------------------------------|----|
| A. | Negative, positive, doubtful | 5 |
| B. | Five Classes | 16 |
| A + B. | Both | 1 |

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

- A. From gynecologists who prefer "negative, positive, doubtful" readings only:
 - 1) I think the Class method is confusing.
 - 2) If diagnosis is difficult, five categories are less helpful than three; actually I would prefer only two, i. e., "negative" and "positive."
- B. From gynecologists who prefer the reports in Papanicolaou's five Classes:
 - 1) We have tried each type of report. If the laboratory standards are consistent and understood by the clinician, the "I to V" classification is definitely more informative. A brief description should be included.
 - 2) I prefer the five Classes, but definitions should be available to physicians who read these reports.
 - 3) I believe five Classes are useful, with explanatory phrases, to meet the level of gynecological understanding in any particular locality.
 - 4) The "I to V" classification is simpler.
 - 5) The classification of Papanicolaou gives a clearer and better knowledge of the diagnosed cellular elements.
 - 6) In 1943, the year that Papanicolaou published his book with Traut, we started using their method for cervical carcinoma detection. Since then we have used their classification as a routine.
 - 7) I prefer to have a cytological diagnosis in the five Classes, and, in addition, a short description of the cellular picture, including a count of leukocytes, red blood cells and vaginal bacterial flora.
 - 8) Summing up of the cytological results into the five Classes permits a more specific presentation of the findings.
- A + B. From a gynecologist who prefers to have both types of report given by the laboratory:
 - 1) We prefer to give both classifications for the benefit of those not familiar with the implications of the Papanicolaou classification, as follows:

Negative	- Class I
Negative	- Class II

Doubtful	- Class III
Strongly suspicious	- Class IV
Positive	- Class V

QUESTION 2: WOULD YOU LIKE THE CYTOLOGY LABORATORY TO REPORT THE TYPE OF CARCINOMA IF POSSIBLE?

- A. Yes
B. No

ANSWERS:

A. Yes 19
B. No 3

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

- A. From gynecologists who request a report on the type of carcinoma:
- 1) I "suggest" it, if I can. As we preach that biopsy confirmation should be obtained in all cases, this is not important, but a virtuosity worth attempting.
 - 2) If it is evident, the type of carcinoma will be reported, i. e., adenocarcinoma or squamous carcinoma. No differentiation is made between carcinoma in situ and early invasive carcinoma of the cervix uteri.
 - 3) Yes, within limits, such as:
"Squamous cell carcinoma probably of cervical origin."
"Adenocarcinoma probably of endocervical origin." (etc.).
 - 4) Yes, I like a report as to whether it is adenocarcinoma or squamous cell cancer.
 - 5) Yes, especially with respect to carcinoma in situ or adenocarcinoma.
 - 6) Yes, because it may indicate where to look for the lesion, e. g., corpus or cervix.
 - 7) A report on the type of carcinoma can be useful if there is no visible lesion of the cervix.
 - 8) Yes, I like a cytological identification of the type of carcinoma, even if this might have only theoretical value at the moment. The question should be further investigated.
 - 9) Yes, I like such a report if possible, but I do not expect it in all cases.
- B. From a gynecologist who does not wish to have the type of carcinoma reported:
- It is sufficient to know whether or not a smear is positive or negative. Any indication for operation is given by further examination, and the diagnosis of the type of carcinoma is a histological problem.

QUESTION 3: SHOULD THE CYTOLOGY LABORATORY INDICATE WHEN THE SMEAR SHOULD BE REPEATED?

- A. Yes
B. No

ANSWERS:

A. Yes 21
B. No 0
A + B. In some instances 1

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

A. From gynecologists who wish the laboratory to indicate when a smear should be repeated:

- 1) Yes. The laboratory should indicate not only when the smear should be repeated, but why it should be repeated.
- 2) If the indication for repeating the smear is based on sound criteria, definitely yes.
- 3) Yes, and sometimes the area from which the smear must be made should be indicated also.
- 4) Yes, the cytologist should give the clinician exact directions. There are some findings (e. g., even in Class II cases) which warrant repetition of smears.
- 5) Yes. If the smear sent for examination is not adequate, it should be repeated within the next few days; in the case of a Class III report, it should be repeated in four weeks.
- 6) Yes. A smear reported as "doubtful" (Papanicolaou Class III) should automatically mean "to be repeated."
- 7) Yes, I like this kind of cooperation; but, in any case, I repeat the smears in all Class III cases.
- 8) Yes, it is very important to indicate when the smear should be repeated, especially in Class III cases.

A + B. From a gynecologist who wishes a repeat smear to be indicated in some instances:

Yes, the laboratory should indicate when the smear should be repeated if there is some good reason, e. g., in "doubtful" cases where there are questionably malignant cells, or where the technical preparation was poor. No indication need be made if the smear is "positive" or "negative."

QUESTION 4: SHOULD THE CYTOLOGY LABORATORY INDICATE IF HISTOLOGICAL EXAMINATION IS RECOMMENDED?

- A. Yes
B. No

ANSWERS:

- A. Yes
B. No

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

A. From gynecologists who wish the laboratory to indicate when histological examination is recommended:

- 1) Yes. The clinician's attention should be called to those cases requiring histological verification since the cytologist is best qualified to judge which findings need immediate follow-up.
- 2) Yes, it is the purpose of the smear method to sort out those cases which require histological verification.
- 3) Yes, and in return the clinician should give a copy of the histological findings to the cytological laboratory (for routine purposes of recording the diagnosis).
- 4) Yes. Biopsy should be performed in all cases when the laboratory is interested in histological findings. In any case, biopsies are of interest to the cytologist so that he can obtain more teaching material and experience.
- 5) Yes, but only in so far as to suggest that biopsy is indicated; never that hysterectomy or other major surgery is indicated on the basis of the smear. This is the responsibility of the clinician.
- 6) Yes, histology should be indicated, particularly when a smear report is "doubtful," but also to confirm all cases with a "positive" cytological reading.

- 7) Yes, the cytology laboratory may indicate when histology is recommended, but actually this should not be necessary. We perform biopsy in all Class IV and V cases, and we repeat the smear in all Class III cases.
- 8) Yes; in Class IV and V cases, cone biopsy and curettage of the endocervix are recommended, or a D & C, if adenocarcinoma is suspected.
- 9) Yes, all suggestions are welcome.

B. From gynecologists who do not wish the laboratory to indicate when histological examination is recommended:

- 1) No. This is the clinician's responsibility.
- 2) No, this is superfluous. If cytology is positive, histology is done.

QUESTION 5: SHOULD THE CYTOLOGY LABORATORY REMIND THE CLINICIAN IF A SUGGESTED REPEAT SMEAR OR RECOMMENDED HISTOLOGY WAS NOT PERFORMED AFTER ATYPICAL CYTOLOGICAL FINDINGS?

- A. Yes
- B. No

IF YES, STATE WHEN:

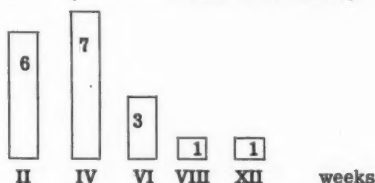
After 2 weeks
 " 4 weeks
 " 6 "
 " 8 "
 " 12 "
 " ? "

ANSWERS:

A. Yes
 B. No

Number of weeks allowed to elapse before reminder is sent to clinician:

(of the 20 gynecologists who answered "yes," two did not state when the clinician should be reminded)



THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

A. From gynecologists who would like to be reminded of suggested repeat smear or recommended histology:

- 1) Yes, the cytologist should remind the clinician, and the clinician should also give the cytologist the reason why a repeat smear or biopsy has not been performed.
- 2) Yes. I think that this problem is the most important one.
- 3) Yes, the clinician should be reminded after two weeks, and again after four weeks. This is important.
- 4) Yes, he should be reminded after two weeks, with another reminder after four weeks if no information has been received in the meantime.

- 5) Yes, the clinician should be reminded, because he may have overlooked or missed the report. Give him six weeks, as he may also have been in doubt and, in any case, have asked the patient to return in two to four weeks for repeat examination.
- 6) Yes. We review our reports every four weeks and remind the clinician if recommended histology has not been performed.
- 7) Yes, but the decision "if and when" the clinician should be reminded, must, I believe, be left to the cytologist's discretion, as it depends on the smear, on the age of the patient, what family she has, etc., and how the local gynecologist reacts in any given case.
- 8) Yes. In Spain most patients are reluctant to submit to biopsy or further observation, so the reminder from the cytologist can be of help to the clinician in this respect.

B. From gynecologists who do not wish to be reminded of repeat smear or recommended histology:

- 1) No. The clinician has the full responsibility in any given case.
- 2) No. This is the responsibility of the clinician. I think it might be a good thing for the cytologist to check up in four weeks, but I do not think it should be his obligation.

QUESTION 6: IF YOU OBTAIN FROM THE CYTOLOGY LABORATORY A CLASS III (OR DOUBTFUL) REPORT FROM A PATIENT WITH GROSSLY ENTIRELY NORMAL CERVIX (PORTIO VAGINALIS UTERI), WHAT IS YOUR NEXT DIAGNOSTIC PROCEDURE?

- a) REPEAT SMEAR
- b) PUNCH BIOPSIES
- c) WEDGE BIOPSIES
- d) CONE BIOPSY
- e) D. & C. (CURETTAGE)
- f) COLPOSCOPY
- g) SCHILLER TEST
- h) COLPOMICROSCOPY

ANSWERS: The order 1-2-3-4 in which these would be performed is indicated:

a) REPEAT SMEAR	b) PUNCH BIOPSIES	c) WEDGE BIOPSIES	d) CONE BIOPSY	e) D. & C. (CURETTAGE)	f) COLPOSCOPY	g) SCHILLER TEST	h) COLPO-MICROSCOPY	THE FOLLOWING COMMENTS WERE MADE IN EXPLANATION OF THE ANSWERS GIVEN:
2	-	-	3	-	1	1	-	As a rule we perform colposcopy & cytology as part of the first examination. If the colposcopic findings are negative but the cytological findings doubtful, colposcopy is repeated (plus acetic acid test & Schiller test), & another smear is obtained. If the cytological findings are again doubtful, conization is performed.
1	-	-	3	3	2	-	-	We wait four weeks. If the smear is again positive we carry out the other diagnostic procedures.
1	-	-	-	-	-	-	-	We never do anything further until the smear is repeated.
2	1	-	-	3	1	1	-	Colposcopy & Schiller test are routinely performed. If abnormal, one or more punch biopsies are performed.

a) REPEAT SMEAR	b) PUNCH BIOPSIES	c) WEDGE BIOPSIES	d) CONE BIOPSY	e) D. & C. (CURETTAGE)	f) COLPOSCOPY	g) SCHILLER TEST	h) COLPO-MICROSCOPY	COMMENTS:
1	-	3	-	-	-	2	-	no comments
1	-	-	2	2	-	-	-	no comments
1	2	-	3	2	1	-	-	Colposcopy is performed in every case; if a suggestive area is seen, punch biopsies are performed.
1	-	-	3	4	2	-	-	Whether to do a cone biopsy or curettage is often influenced by the type of cells found, although as a rule we do both of these procedures at one time.
1	2	-	3	3	1	1	-	Endocervical curettage is performed at the same time as punch biopsy. The complete cytological report with suggestion of the possible origin of the atypical cells (squamous, endocervical or glandular cells) is of great help in indicating where biopsy should be done first. Hysterosalpingography is later performed.
-	1	-	2	2	1	1	-	Colposcopy & cytology are performed in every case. In the case of a doubtful report, the Schiller test is performed as part of extended colposcopy. If there is a suspicious finding on colposcopy, punch biopsy is done immediately; if there is no suspicion on colposcopy, D. & C. of the cervical canal are performed.
1	-	-	2	2	1	1	-	We do colposcopy routinely before we take smears for cytology. After that we do Schiller test at the same consultation. We do cone biopsy, or cervical & uterine curettage at different levels to determine a difficult diagnosis.
1	2	-	4	3	-	1	-	The Schiller test should always be used. Also, gynecological examination under anesthesia may be necessary.
1	1	-	3	2	1	1	2	I do colposcopy combined with Schiller test and extended colposcopy with acetic acid routinely. This is followed by pelvic examination. Colpomicroscopy is indicated in cases where atypical findings are recognized on colposcopy. Usually I do punch biopsies on the first visit where necessary.
1	1	-	-	2	1	1	-	After a Class III report we always do extended colposcopy using acetic acid & Schiller test; we also repeat the smear at the same time & do a punch biopsy (under the guidance of the colposcope). If a second Class III is given, then we do a fractional curettage.
1	3	-	-	4	-	2	-	Repetition of smears always results in a positive or negative diagnosis. If positive the patient has biopsies, examination under anesthesia, and D. & C. If negative, nothing more is done unless indicated for other reasons.

a) REPEAT SMEAR	b) PUNCH BIOPSIES	c) WEDGE BIOPSIES	d) CONE BIOPSY	e) D. & C. (CURETTAGE)	f) COLPOSCOPY	g) SCHILLER TEST	h) COLPO- MICROSCOPY	COMMENTS:
2	-	3	4	-	1	1	-	Schiller test and colposcopy are performed routinely, as are smears. If these three tests are atypical, biopsy is then done, almost as a routine procedure.
1	3	-	4	5	-	2	-	We do an endocervical "curette biopsy" before doing a cone.
1	-	-	2	-	-	-	-	no comments
1	-	-	2	3	-	-	-	no comments
3	-	-	-	4	1	2	-	If after Schiller test & colposcopy no abnormality of the portio has been found, we can suspect endocervical or endometrial malignancy. The cytologist can usually give us information on the source of the suspect cells, but not in every case. Endocavitary biopsy frequently gives us the explanation of a Class III report in the absence of ectocervical pathology. The Gusberg endocervical curette is used, & endometrial aspiration biopsy also performed.
1	-	-	-	-	-	-	-	no comments
4	-	-	5	-	1	2	3	no comments

OBSERVATIONS ON THE ABOVE RESULTS:

Where broad conclusions could be drawn, this has been done.

- 1) Colposcopy: In some instances where colposcopy was performed it was a special examination rather than a routine procedure.

Colposcopy performed 13

Colposcopy not performed 9

- 2) Repeat Smear: After a Class III report a repeat smear was the commonest follow-up procedure, either as the initial investigation or following colposcopy.

Smear repeated 21

Smear not repeated 1

- 3) Biopsy: In 19 answers some type of cervical biopsy was indicated as the first surgical follow-up procedure on receiving a Class III report.

Cervical biopsy after repeat smear 18

Cervical biopsy without repeat smear 1

No cervical biopsy 3

Total
= 19

The types of biopsy performed were as follows:

- a) Conization:

Total number of conizations performed 15

Cone without previous punch or wedge biopsy 8

b) Punch Biopsy:

Total number of punch biopsies performed

9

Punch biopsies without subsequent cone

3

c) Wedge Biopsy:

Total number of wedge biopsies

2

Wedge biopsy without subsequent cone

1

4) Curettage:

D. & C. was performed as a first surgical follow-up procedure in one case:

D. & C. without cervical biopsy

1

D. & C. with cervical biopsy

14

No D. & C.

7

QUESTION 7: IF YOU OBTAIN FROM THE CYTOLOGY LABORATORY A CLASS IV OR CLASS V POSITIVE REPORT FROM A PATIENT WITH GROSSLY ENTIRELY NORMAL CERVIX (PORTIO VAGINALIS UTERI), WHAT DO YOU PERFORM AS THE NEXT DIAGNOSTIC PROCEDURE?

- a) REPEAT SMEAR
- b) PUNCH BIOPSIES
- c) WEDGE BIOPSIES
- d) CONE BIOPSY
- e) D. & C. (CURETTAGE)
- f) COLPOSCOPY
- g) SCHILLER TEST
- h) COLPOMICROSCOPY

ANSWERS:

The order 1-2-3-4 in which these would be performed is indicated:

a) REPEAT SMEAR	b) PUNCH BIOPSIES	c) WEDGE BIOPSIES	d) CONE BIOPSY	e) D. & C. (CURETTAGE)	f) COLPOSCOPY	g) SCHILLER TEST	h) COLPO-MICROSCOPY	THE FOLLOWING COMMENTS WERE MADE IN EXPLANATION OF THE ANSWERS GIVEN:
2	-	-	3	-	1	1	-	As a rule we perform colposcopy & cytology as part of the first examination. If the colposcopic findings are negative but the cytological findings doubtful, colposcopy is repeated (plus acetic acid & Schiller test), & another smear is obtained. A repeated positive smear gives us the indication for conization (as in Class III cases).
-	-	-	1	1	1	-	-	Cone biopsy and endocervical curettage are performed. If adenocarcinoma is suspected, D. & C. is performed first.
-	-	-	1	2	-	-	-	If repeat smears are still positive after cone & D. & C., we proceed to hysterectomy. We never perform colposcopy, Schiller test or colpomicroscopy.
-	1	-	-	1	1	1	-	Colposcopy & Schiller test are routinely performed. If abnormal, one or more punch biopsies are performed.
3	-	2	-	-	-	1	-	no comments

a) REPEAT SMEAR	b) PUNCH BIOPSIES	c) WEDGE BIOPSIES	d) CONE BIOPSY	e) D. & C. (CURETTAGE)	f) COLPOSCOPY	g) SCHILLER TEST	h) COLPO-MICROSCOPY	THE FOLLOWING COMMENTS WERE MADE IN EXPLANATION OF THE ANSWERS GIVEN:
-	-	-	-	1	-	-	-	no comments
1	-	-	3	2	1	-	-	The endocervix & corpus are separately curetted.
1	-	-	3	4	2	-	-	In this case the smears are repeated as a matter of record before "destroying" the evidence.
1	-	-	2	3	1	1	-	If the cytological report indicates endometrial or glandular cells, curettage is done at the same time or before cone biopsy; hysterosalpingography is also performed later.
-	1	-	2	2	1	1	-	Colposcopy & cytology are performed in every case. In the case of a doubtful report the Schiller test is performed as a part of extended colposcopy. If there is a suspicious finding on colposcopy, punch biopsy is done immediately; if there is no suspicion on colposcopy, D. & C. of the cervical canal is performed (as in Class III cases).
1	2	-	3	3	1	1	-	In our detection clinic we do colposcopy by Hinselmann's method, after the gynecological physical examination. After making vaginal smears the cervix is swabbed with 2% acetic acid & Schiller's test is used routinely. Cases are thus screened for biopsy where necessary.
1	2	-	4	3	-	1	-	The Schiller test is always performed.
-	3	-	5	4	1	1	2	no comments
1	-	-	3	3	2	2	-	We first repeat the smear, & then do colposcopy followed by biopsy & curettage.
-	2	-	-	3	-	1	-	If biopsies & D. & C. are negative, the patient is seen at two month intervals. This is gradually increased to six month intervals. On return visits the patient has a smear, Schiller test, & inspection. If she develops new symptoms or a change in the examination findings, she is readmitted for examination under anesthesia, D. & C. & biopsy. A Younge biopsy forceps or the equivalent is used.
1	-	2	3	2	1	1	-	Usually when the Schiller test & colposcopy give results in accordance with the smears, the biopsy is positive. If everything is normal except the smear, the cancer may be discovered by endocervical curettage.
1	3	-	4	5	-	2	-	We do an endocervical "curette biopsy," a cone, followed by a full D. & C., depending on the type of cells in the smear.
1	-	-	2	2	-	-	-	A positive biopsy is then followed by removal of the uterus if the patient is menopausal and a good surgical risk.

a) REPEAT SMEAR	b) PUNCH BIOPSIES	c) WEDGE BIOPSIES	d) CONE BIOPSY	e) D. & C. (CURETTAGE)	f) COLPOSCOPY	g) SCHILLER TEST	h) COLPO-MICROSCOPY	THE FOLLOWING COMMENTS WERE MADE IN EXPLANATION OF THE ANSWERS GIVEN:
1	-	2	3	-	-	-	-	no comments
-	3	-	-	4	1	2	-	If after Schiller test & colposcopy no abnormality of the portio has been found, we can suspect endocervical or endometrial malignancy. The cytologist can usually give us information on the source of the suspect cells, but not in every case. Endocavitary biopsy frequently gives us the explanation of a Class III report in the absence of ectocervical pathology. The Gusberg endocervical curette is used, & endometrial aspiration biopsy also performed. In addition to this, punch biopsy of possibly suspicious areas on the ectocervix should be done.
-	-	-	1	1	-	-	-	no comments
4	-	-	5	5	1	2	3	The same procedure is followed as in a Class III case, with curettage in addition.

OBSERVATIONS ON THE ABOVE RESULTS:

Where broad conclusions could be drawn, this has been done.

- 1) Colposcopy: As in dealing with Class III cases, colposcopy was performed with similar frequency:

Colposcopy performed 13

Colposcopy not performed 9

- 2) Repeat Smear: Smears were repeated as follows:

Smear repeated 13

Smear not repeated 9

- 3) Cervical Biopsy: Some type of cervical biopsy was performed as follows:

Cervical biopsy performed 21

No cervical biopsy performed 1

The types of biopsy performed were as follows:

- a) Conization:

Total number of conizations performed 17

Cone without previous punch or wedge biopsy 10

- b) Punch Biopsy:

Total number of punch biopsies 8

Punch biopsies without subsequent cone 3

- c) Wedge Biopsy:

Total number of wedge biopsies 3

Wedge biopsy without subsequent cone 1

4) Curettage: D. & C. was performed in 19 instances as follows:

D. & C. in addition to cervical biopsy	18	
D. & C. without cervical biopsy	1	Total
D. & C. not performed in addition to cervical biopsy	3	= 19

II. HORMONAL EVALUATION

QUESTION 8: IF YOU REQUEST A HORMONAL EVALUATION FROM THE CYTOLOGY LABORATORY, DO YOU PREFER:

- A. A cytological evaluation in comparison with age and menstrual history (e. g., "too marked estrogenic activity for age and menstrual history),
- B. Karyopyknotic Index only,
- C. A cytological evaluation in comparison with age and menstrual history and the Karyopyknotic Index?

ANSWERS:

- | | |
|--|----|
| A. A comparative clinico-cytologic evaluation only | 9 |
| B. Karyopyknotic Index only | 3 |
| C. Both evaluations | 10 |

THE FOLLOWING COMMENTS WERE RECEIVED IN SUPPORT OF THE ABOVE ANSWERS:

- A. From gynecologists who prefer only a cytological evaluation in comparison with age and menstrual history:
 - 1) When we take smears we state the patient's age, the date of the last menstruation and the reason for taking the smear (amenorrhea, oligomenorrhea, menopause, etc.). From these data we like a clinico-cytological evaluation.
 - 2) We prefer a cytological evaluation. The Karyopyknotic Index is requested only in special cases (e. g., sterility, or hormonal cases of importance, such as amenorrhea).
 - 3) As a gynecologist I do not ask for hormonal evaluation. As a cytologist, I sometimes add a cytological evaluation to my report.
- B. From a gynecologist who prefers only the Karyopyknotic Index:

Evaluation in comparison with age and menstrual history should be done by the clinician himself.
- C. From gynecologists who, when requesting a hormonal reading, prefer a cytological evaluation in comparison with age and menstrual history AND the Karyopyknotic Index:
 - 1) The cytological evaluation tells me what I want to know and the count is an objective value that may be useful in subsequent comparison.
 - 2) The cytologist is not a mere machine for counting cells. He should, after gaining the necessary experience, give his opinion on lesions and on the hormonal status.
 - 3) I always request: a) complete morphological evaluation, b) Karyopyknotic and Eosinophilic Indices, and c) report of infection, mycosis or trichomoniasis, in order to avoid errors in diagnosis.
 - 4) In addition to clinico-cytological evaluation and a Karyopyknotic Index, we also use the scheme of Schmitt for identifying the functional stage.
(Schmitt, A.: Eine Gradeinteilung für die funktionelle Zytodiagnostik in der Gynaekologie, Geburtsh. u. Frauenhk. 13:593, 1953)

QUESTION 9: DOES THE KARYOPYKNOTIC INDEX PER SE MEAN TO YOU A QUANTITATIVE MEASUREMENT OF ESTROGENIC ACTIVITY?

- A. Yes
- B. No

ANSWERS:

- A. Yes
- B. No

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

- A. From gynecologists to whom the Karyopyknotic Index means a quantitative measurement of estrogenic activity:
 - 1) Yes, I think it is the best measurable index we have.
 - 2) Yes. It is often of help in estimating estrogenic activity.
 - 3) Yes, but as a routine procedure we do not count, only estimate the relative number of pyknotic nuclei. For scientific studies we actually perform a differential count.
 - 4) Yes, it is a quantitative measure of estrogen activity, with a few limitations. The Eosinophilic Index must be considered too. Interpretation of the smear should be done in the light of a follow-up observation of the same patient, and, where necessary, after estrogen treatment.
 - 5) Yes, but we only do it in cases where special hormonal study is indicated.
 - 6) Yes, I accept the Karyopyknotic Index, in the absence of trichomonads.
 - 7) Yes, but it is only a semi-quantitative index. It may be influenced by local factors such as infection, etc.
- B. From gynecologists to whom the Karyopyknotic Index does not mean a quantitative measurement of estrogenic activity:
 - 1) I should be glad to receive references of any work in which the Karyopyknotic Index has been correlated with blood estrogens; without this, I cannot see how the Karyopyknotic Index is of any significance. Also, the count must depend on how the specimen is taken (cervical or vaginal smear, etc.), and this is not always the same.
 - 2) No, it can only be used as a measurement of estrogen activity if corroborated by a true Eosinophilic Index. A high Karyopyknotic Index does not automatically correspond with high estrogenic activity, but only if a high Eosinophilic Index also exists.
 - 3) No, not always. The Karyopyknotic Index does not seem to represent estrogenic activity, particularly in menopausal women with endometrial carcinoma.
 - 4) No, the Karyopyknotic Index is not a quantitative measurement, but only a semi-quantitative index.

QUESTION 10: WOULD YOU LIKE THE KARYOPYKNOTIC INDEX ON EVERY PATIENT?

- A. Yes
- B. No

ANSWERS:

- A. Yes
- B. No

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

- A. From a gynecologist who would like a Karyopyknotic Index on every patient:

Yes, I like a Karyopyknotic Index at least once or twice weekly for a month, in cases requiring hormonal evaluation.

B. From gynecologists who would not like a Karyopyknotic Index on every patient:

- 1) No, it is of no practical value in estrogen deficiency states.
- 2) No, it is only rarely of value.
- 3) No, it would be too much work for the laboratory.
- 4) No, I request it only on patients with endocrine disorders.
- 5) No, only if requested.

QUESTION 11: SHOULD THE KARYOPYKNOTIC INDEX BE REPORTED ONLY IF APPARENTLY ABNORMAL OR IF REQUESTED?

- A. Yes
B. No

ANSWERS:

- A. Yes
B. No

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

A. From gynecologists preferring the Karyopyknotic Index to be reported only if apparently abnormal or if requested:

- 1) Yes, the Karyopyknotic Index need only be reported if apparently abnormal or if especially requested, but I think an estimate of the hormonal status should be included in all cases, such as "marked estrogenic deficiency," etc.
- 2) Yes, but especially if apparently abnormal; occasionally an unrecognized granulosa cell tumor will be detected.
- 3) Yes, endocrine reading is of importance in some patients; and in these special cases the reading should be complete.

B. No comments were made by the gynecologists who answered the above question in the negative.

III. MICROBIOLOGICAL EVALUATION

QUESTION 12: DO YOU WISH THE CYTOLOGY LABORATORY, IF POSSIBLE, TO REPORT "HEALTHY" OR "NON-HEALTHY" VAGINAL FLORA?

- A. Yes
- B. No

ANSWERS:

- A. Yes
- B. No

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ANSWERS ABOVE:

- A. From gynecologists who wish the cytology laboratory to report "healthy" or "non-healthy" vaginal flora:
 - 1) Yes, "healthy" or "non-healthy" flora should be reported on every patient.
 - 2) Yes. A complete cytological evaluation should always provide the clinician with such information about the biology of the vagina.
 - 3) Yes, especially with reference to trichomonads.
 - 4) Yes. We prepare two smears from every patient (one for phase-contrast and one for the Papanicolaou stain), and the vaginal flora are reported only by the phase-contrast method.
 - 5) Yes, if the cytologist also has some bacteriological knowledge.
- B. From gynecologists who do not wish the cytology laboratory to report "healthy" or "non-healthy" vaginal flora:
 - 1) No. This could vary with estrogen status also, and the term "non-healthy" in an estrogen deficiency smear would be misleading.
 - 2) No. There are too many mistakes by technicians.

QUESTION 13: IF YES TO QUESTION 12, DO YOU LIKE THE CYTOLOGY LABORATORY TO CLASSIFY VAGINAL BACTERIAL FLORA INTO THE FOLLOWING THREE GROUPS:

- a) Apparently B. Vag. Doederlein,
- b) Apparently Mixed Bacteria,
- c) Apparently Cocci or Coccoid Bacteria?

- A. Yes
- B. No

ANSWERS:

- A. Yes
- B. No

(Of the 16 gynecologists who answered "yes" to Question 12, one did not reply to Question 13.)

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

- A. From gynecologists who like the vaginal flora to be classified as above:
- 1) Yes, I like the vaginal flora to be classified into the above three types.
 - 2) Yes, but only B. vag. Doederlein and mixed bacteria should be reported.
 - 3) Yes, if the cytologist also has some bacteriological knowledge.
 - 4) Yes. Actually we use, more or less, the classification of Seitz (four groups).
- B. From a gynecologist who does not like the cytology laboratory to classify vaginal bacterial flora:
- No, we have our own bacteriologist for this.

QUESTION 14: DO YOU EXPECT THE CYTOLOGY LABORATORY TO REPORT FUNGI (MONILIA) OR TRICHOMONADS WHERE PRESENT?

- A. Yes
B. No

ANSWERS:

- A. Yes
B. No

THE FOLLOWING COMMENTS WERE MADE IN SUPPORT OF THE ABOVE ANSWERS:

- A. From gynecologists who expect the cytology laboratory to report fungi or trichomonads:
- 1) The presence or absence of fungi and trichomonads should be reported on every smear.
 - 2) We use the hanging-drop technique to detect fungi or trichomonads, but we ask the cytologist for confirmation or for a further investigation if this fails.
 - 3) Yes, because trichomonads and fungi may be unrecognized clinically and yet account for the patient's symptoms.
 - 4) We expect a report on trichomonads especially.
 - 5) Yes, trichomonads should be reported.
 - 6) Yes, especially trichomonads.
 - 7) Yes. But for vaginal flora reports we use a fresh specimen (under the phase-contrast microscope).
 - 8) I even place considerable reliance on the cytologist to tell me!
- B. From a gynecologist who does not expect the cytology laboratory to report fungi or Trichomonads:
- The search for malignant cells requires one's entire attention. To look for other things (e.g., trichomonads) requires further screening, not a simultaneous one.

IV. OTHER REQUESTS

QUESTION 15: IS THERE ANY OTHER INFORMATION YOU WOULD LIKE TO RECEIVE ROUTINELY FROM THE CYTOLOGY LABORATORY?

- A. Yes
- B. No

IF YES, WHICH?

- a) Inflammatory reaction
- b) SR-cells
- c) Radiation response
- d) Others

ANSWERS:

- A. Yes 17
- B. No 5
- a) Inflammatory reaction 13
- b) SR-cells 7
- c) Radiation response 14
- d) Others 5

THE FOLLOWING COMMENTS WERE MADE IN EXPLANATION OF THE ABOVE ANSWERS:

A, a, b, c. From gynecologists who would like inflammatory reaction, SR-cells or radiation response to be reported routinely:

- 1) It is essential to know if an inflammatory reaction is present or not when dealing with suspected malignancy.
- 2) Yes, inflammatory reaction and radiation response should be reported routinely. We particularly like to observe the reaction of the vaginal epithelium to intra-vaginal X-ray treatment, in order to prevent fistulae.

A, d. From gynecologists who would like other information routinely, the following additional readings were requested:

- 1) I like a report as to whether a slide is adequate or not, with respect to fixation or the amount of material provided.
- 2) The presence of blood in a smear should be indicated.
- 3) The presence of blood or blood pigment should be reported.
- 4) We like to have routine cytological studies during pregnancy.
- 5) Cells from abnormal benign growths should be reported.

B. From gynecologists who do not wish to receive other information routinely:

- 1) No, other information is only necessary when specially requested.
- 2) No. The procedures mentioned (SR-cells and radiation response) I regard as "special" and not as "routine."

SUGGESTED FORM FOR CYTOLOGICAL REPORTS
BASED ON THE ANSWERS TO THE QUESTIONNAIRE

Last Name _____ First Name _____ Age _____ Unit No. _____
 Smears taken on _____ Smears prepared by Dr. _____ Cytol. No. _____

I. CANCER SCREENING

- ☐ CLASS I: Absence of atypical or abnormal cells: **NEGATIVE**
☐ CLASS II: Atypical cytology but no evidence of malignancy: **NEGATIVE**
☐ CLASS III: Cytology suggestive of, but not conclusive for, malignancy: **DOUBTFUL**
☐ CLASS IV: Cytology strongly suggestive of malignancy: **POSITIVE**
☐ CLASS V: Cytology conclusive for malignancy: **POSITIVE**

Recommended follow-up:

Repeat smear: As soon as possible ☐ In _____ weeks ☐ At next visit ☐
 Cervical biopsy: ☐ Curettage: ☐

Histology will probably show the following type of lesion:

☐ Squamous carcinoma ☐ Adenocarcinoma Other: _____

II. HORMONAL EVALUATION could be made: Yes ☐ No ☐

If not, why?

Reading is compatible with clinical history: Yes ☐ No ☐

If not, why?

Karyopyknotic Index: _____ % (if requested or apparently abnormal)

III. MICROBIOLOGICAL CLASSIFICATION could be made: Yes ☐ No ☐

☐ Apparently B. vag. Döderlein ☐ Mixed bacteria ☐ Apparently coccoid bacteria
☐ Trichomonads ☐ Fungi

IV. OTHER REQUESTS:

Inflammatory reaction present: Yes ☐ No ☐

Radiation response: _____ SR-cells: _____

NO READING GIVEN; SMEAR INADEQUATE ☐

Signature _____

REMINDER:

The above reading was made _____ weeks ago. This is the _____ reminder.

THE SYMPOSIA OF THE INTERNATIONAL ACADEMY OF GYNECOLOGICAL CYTOLOGY

INTRODUCTORY REMARKS

The Symposia of ACTA CYTOLOGICA are held entirely by correspondence and contain international discussions of scientific problems of interest to the gynecological cytologist.

System for Selecting Subjects for Symposia: Members of the Academy and invited guest speakers will receive questionnaires from the Editorial Office from time to time requesting suggestions for discussion topics for future Written Symposia of the International Academy of Gynecological Cytology. From the recommendations received, the Editorial Office will draw up the list of main subjects and will publish these subjects in ACTA CYTOLOGICA, at least two issues prior to expected use, under the heading FUTURE SYMPOSIA.

The Members of the Academy and invited guest speakers are then invited to submit discussion points under these main headings which they wish to be included in the Symposia.

From these suggestions the Editorial Office will formulate and publish a final detailed discussion program in ACTA CYTOLOGICA immediately preceding the one where these topics are to be considered, under the heading, THE NEXT SYMPOSIUM.

Participation in the Symposia by correspondence: The participation in the Written Symposia of the International Academy of Gynecological Cytology is open to all Members of the Academy. If possible there will be no restriction as to the number of points of discussion in which an individual Member may participate.

Non-members will participate by invitation only.

Instructions for Authors: Each problem will be introduced by a Main Speaker or Speakers. These principal papers will then be considered by persons identified as Discussants. As a general rule, approximately 400 words each will be allocated for main papers and 120 words each will be allocated for the contributions of the Discussants. The Main Speakers will then be given the opportunity to make unlimited Closing Remarks.

Photomicrographs and tables may be reproduced: one full page for each principal paper and for the paper of the Discussant (maximum one-half page per contribution). The photomicrographs and tables should be submitted in glossy photographic prints, preferably in the size of 5×7 inches (i.e., 12×18 cm) and should show a proportional 10μ scale on its reverse side. Each figure should be accompanied by a comprehensive caption.

The Discussants are requested to strictly restrict their contributions to the discussion of the main papers. Discussions which are not directly related to the main paper cannot be accepted. It is suggested that the Discussants prepare their contributions in such a manner that the reader may gain the impression of an actual round table conference.

The Closing Remarks of the Main Speakers should be limited to the answering of questions raised in the discussion and to other directly related information.

The Bibliography for the papers of both Main Speaker and Discussant should be organized in the same manner as in the American Journal of Obstetrics and Gynecology, at the end of the paper. Every cited opinion or publication should have a reference in the bibliography.

Deadline for Contributions: The Editorial Office in accordance with the Executive Council of the Academy will set deadlines for each written symposium. These will include:

1. deadline for agreements to contribute.
2. deadline for main papers.
3. deadline for discussions.
4. deadline for closing remarks.

Reprints: Authors may receive reprints of their papers by ordering these reprints before the particular issue goes to press. There will be a nominal charge for reprints: \$6.00 per page for the first one hundred copies, and \$3.00 per page for each additional hundred.

LES SYMPOSIA PAR CORRESPONDANCE DE L'ACADEMIE INTERNATIONALE DE CYTOLOGIE GYNECOLOGIQUE

Les *Symposia par Correspondance* des ACTA CYTOLOGICA présentent des discussions internationales sur des problèmes scientifiques intéressant le cytologiste gynécologique.

Système du choix des sujets pour les symposia: Les membres et les invités de l'Académie recevront périodiquement du bureau de rédaction des questionnaires leur demandant des suggestions pour les problèmes à discuter lors de futurs symposia de l'Académie Internationale de Cytologie Gynécologique. En partant de ces propositions, le bureau de rédaction dressera la liste des sujets principaux qui seront publiés dans les ACTA CYTOLOGICA, sous la rubrique FUTURS SYMPOSIA. Cette liste paraîtra deux numéros avant la date de ces symposia.

Les membres et les invités de l'Académie seront alors priés de soumettre les points de discussion qu'ils désirent voir figurer comme compléments à ces sujets.

Le bureau de rédaction établira d'après ces suggestions le programme définitif et détaillé des discussions et qui sera publié dans les ACTA CYTOLOGICA précédant immédiatement le symposium, sous la rubrique LE PROCHAIN SYMPOSIUM.

Participation aux Symposia par Correspondance: La participation aux Symposia par Correspondance de l'Académie Internationale de Cytologie Gynécologique est ouverte à tous les membres de l'Académie. Il n'y a pas de restriction du nombre des sujets de discussion auxquels un seul membre désire prendre part.

Les non-membres ne pourront participer aux Symposia que s'ils y sont invités.

Recommandations pour les auteurs: Chaque sujet principal sera présenté par un Rapporteur Général ou des Rapporteurs. Ces mémoires principaux seront alors soumis aux Participants à la Discussion. En règle générale 400 mots seront accordés aux Rapporteurs des sujets principaux, et, 120 mots aux Participants à la Discussion. Les Rapporteurs Généraux pourront clôturer les discussions par un nombre illimité de remarques.

Des microphotos et graphiques pourront être reproduites à raison d'une page entière pour chaque sujet principal et une demie page au maximum pour les discussions. Les microphotos et les graphiques doivent être présentées sur du papier brillant, de préférence dans le format 12 x 18 cm. Chaque figure devra être accompagnée d'une légende explicative précise.

Les membres et invités prenant part aux discussions sont invités à limiter strictement leurs interventions aux discussions des sujets principaux. Des discussions qui n'ont pas de rapport direct avec le sujet principal ne pourront être acceptées. Il est recommandé que les discussions soient rédigées d'une manière telle que le lecteur puisse obtenir l'impression d'assister à une discussion réelle à la table ronde.

Les Remarques de Cloture du Rapporteur Général devront se limiter à la réponse aux questions soulevées dans les discussions et aux autres informations éventuelles ayant un rapport direct avec le sujet.

La bibliographie des rapports et discussions devra être rédigée de la même manière que celle de l'American Journal of Obstetrics & Gynecology et figurer à la fin du texte. Chaque opinion ou publication citée dans le texte doit avoir sa référence dans la bibliographie.

Dates limite pour les collaborations: Le bureau de rédaction, en accord avec le Conseil Exécutif de l'Académie, fixera des dates limite pour chaque Symposium par Correspondance. Ces dates doivent comprendre:

1. un délai pour l'acceptation des collaborations,
2. un délai pour les sujets principaux,
3. un délai pour les discussions,
4. un délai pour les remarques de cloture.

Tirés-à-part: les auteurs pourront obtenir des tirés-à-part de leurs communications en les demandant avant la mise sous presse des ACTA CYTOLOGICA publiant leurs articles. Les tirés-à-part seront facturés: \$6.00 par page de texte pour le premier cent et \$3.00 pour chaque centaine supplémentaire.

DIE SCHRIFTLICHEN SYMPOSIEN DER INTERNATIONALEN AKADEMIE FÜR GYNÄKOLOGISCHE ZYTOLOGIE

Die schriftlichen Symposien der ACTA CYTOLOGICA befassen sich auf internationaler Basis mit wissenschaftlichen Problemen, die für den gynäkologischen Zytologen von Interesse sind.

System der Thema-Auswahl für die Symposien: Die Mitglieder der Akademie und die eingeladenen Gastvortragenden erhalten von Zeit zu Zeit Fragebogen von der Schriftleitung mit der Bitte um Thema-Vorschläge für zukünftige schriftliche Symposien der Internationalen Akademie für Gynäkologische Zytologie. Die Schriftleitung stellt dann auf Grund dieser Thema-Vorschläge eine Liste von Haupt-Themen zusammen, und wird diese Liste unter dem Titel ZUKÜNFTIGE SYMPOSIEN bekanntgeben.

Die Mitglieder der Akademie und die speziell eingeladenen Gastvortragenden sind dann gebeten, der Schriftleitung ihre Vorschläge für individuelle Diskussionsthemen innerhalb des betreffenden Hauptthemas zu machen, die sie diskutiert sehen wollen.

Die Schriftleitung bereitet sodann auf Grund dieser Einzelvorschläge das Programm mit allen Einzelpunkten vor, und veröffentlicht dieses Programm in dem Heft, das dem betreffenden Symposium vorausgeht, unter dem Titel DAS NÄCHSTE SYMPOSIUM.

Teilnahme an den Schriftlichen Symposien: Die Teilnahme an den Symposien ist offen für alle Mitglieder der Internationalen Akademie für Gynäkologische Zytologie. Nach Möglichkeit können die Mitglieder ohne Beschränkung an allen Diskussionspunkten teilnehmen.

Nicht-Mitglieder nehmen an den Symposien *nur auf besondere Einladung teil.*

Instruktionen für Autoren: Jedes Thema wird von einem oder mehreren Referenten behandelt. Diese Referate werden dann von Diskussions-Vortragenden besprochen. Im allgemeinen werden Referate auf etwa 400 Worte beschränkt, und Diskussions-Vorträge auf 120 Worte. Die Referenten erhalten dann die Gelegenheit, Schlussbemerkungen ohne Wortzahlbeschränkung zu machen.

Mikrophotographien und Tabellen können abgedruckt werden: eine Ganzseite kann Referenten und eine halbe Seite Diskussionsvortragenden für Abbildungen zur Verfügung gestellt werden. Die Photographien sind auf Hochglanzpapier, und möglichst in der Grösse 12 × 18 cm erbeten und soll ein proportionales 10 μ zeichnen auf der Rückseite haben. *Jede Abbildung muss von einem erklärenden, Untertitel begleitet sein.*

Die Diskussionsvortragenden sind gebeten, sich in ihren Beiträgen *streng an das Hauptreferat zu halten.* Diskussionsbeiträge, die sich nicht an das Hauptthema halten, *können nicht berücksichtigt werden.* Es wird vorgeschlagen, dass die Diskussionsvorträge in einem Stil abgefasst sind, dass der Leser den Eindruck gewinnt, als ob es sich um eine Diskussion am runden Tisch gehandelt hätte.

Die Schlussbemerkungen der Referenten sollen sich nach Möglichkeit auf die Beantwortung von Diskussionsfragen beschränken.

Die Bibliographie der Referate und der Diskussions-Vorträge sollen *am Schluss* der Beiträge nach dem Muster der Bibliographien im American Journal of Obstetrics and Gynecology aufgeführt werden. *Jede zitierte Ansicht oder Publikation muss eine Referenz in der Bibliographie haben.*

Termine für Beiträge: Die Schriftleitung setzt in Übereinstimmung mit dem Executive Council der Akademie die Termine für die Schriftlichen Symposien fest. Diese folgenden Termine werden bekanntgegeben:

1. Termin für Erhalt der Beitrags-Zusagen,
2. Termin für Erhalt der Hauptreferate,
3. Termin für Erhalt der Diskussions-beiträge.
4. Termin für Erhalt der Schlussbemerkungen.

Sonderdrucke: Autoren können Sonderdrucke ihrer Beiträge bestellen, bevor die betreffende Ausgabe in Druck geht. Die Schriftleitung muss diese Sonderdrucke berechnen und wird einen Betrag von \$6.00 pro Seite und 100 Sonderdrucke, und einen Betrag von \$3.00 für jedes weitere Hundert erheben müssen.

SIMPOSIUM ESCRITO DE LA ACADEMIA INTERNACIONAL DE CITOLOGIA GINECOLOGICA

El simposium escrito de ACTA CYTOLOGICA contiene discusiones internacionales sobre problemas científicos que son de interés para el citólogo ginecológico.

Sistema de selección de materias para el simposium: Tanto los miembros como los oradores invitados por la Academia recibirán, periódicamente, cuestionarios de la oficina editorial requiriéndoles sugerencias para temas de discusión con destino a futuros Simposium escritos de la Academia Internacional de Citología Ginecológica. Con las sugerencias recibidas, la oficina editorial confeccionará una lista de los temas más interesantes, lista que será publicada en ACTA CYTOLOGICA con dos números de anticipación a la fecha de su posible publicación, bajo el epígrafe "SIMPOSIUM FUTUROS."

Los miembros y oradores invitados de la Academia pueden sugerir los puntos especiales de discusión incluidos en estos encabezamientos principales, que ellos desearían que fueran incluidos en el Simposium.

Con estas sugerencias, la Oficina Editorial confeccionará y publicará una lista detallada del programa de la discusión en el número de ACTA CYTOLOGICA inmediatamente anterior a aquel en que han de ser incluidos los temas, bajo el epígrafe de: EL PROXIMO SIMPOSIUM.

Participación en el Simposium Escrito: La participación en los Simposium Escritos de la Academia Internacional de Citología Ginecológica está abierta para todos los miembros de la Academia. No habrá restricción alguna sobre el número de puntos de discusión en los que cualquier miembro desee participar.

Los no-miembros podrán participar *unicamente por invitación*.

Instrucciones a los Autores: Cada problema deberá ser presentado por un orador u oradores. Estos trabajos principales serán entonces discutidos por los comunicantes. Como regla general, se permite un máximo de 400 palabras para los trabajos principales y 120 palabras para las contribuciones de los comunicantes. Al orador principal se le da la oportunidad de hacer rectificaciones finales ilimitadas.

Pueden reproducirse microfotografías y tablas: una página por cada trabajo principal y un máximo de media página por discusión. Las microfotografías y tablas deberán enviarse en forma de copias fotográficas amplias. A ser posible de 5 x 7 pulgadas (12 x 18 cms). *Cada figura deberá acompañarse de su correspondiente leyenda.*

Se suplica a los comunicantes *ajustar estrictamente sus comunicaciones a la discusión de los trabajos principales*. Las discusiones que no estén directamente relacionadas con el trabajo principal *no podrán ser aceptadas*. Se sugiere que los comunicantes realicen sus contribuciones de manera tal que el lector tenga la impresión de estar ante una verdadera mesa redonda.

Las rectificaciones finales de los ponentes deberán limitarse a contestar las preguntas aparecidas a lo largo de la discusión así como a otras directamente relacionadas con el tema.

La Bibliografía, tanto de las Ponencias como de las Comunicaciones deberá redactarse de la misma forma que figura en el American Journal of Obstetrics and Gynecology, *al final del trabajo. Toda opinión o publicación citada deberá tener su correspondiente referencia en la bibliografía.*

Impresos para las Contribuciones: La Oficina Editorial, de acuerdo con el Consejo Ejecutivo de la Academia proporcionará formularios para cada simposium escrito. Estos incluirán:

- 1°. Formularios para acuerdo de contribución,
- 2°. Formularios para las ponencias,
- 3°. Formularios para las discusiones,
- 4°. Formularios para las anotaciones finales.

THE NEXT SYMPOSIUM

LE SYMPOSION PROCHAIN - DAS NÄCHSTE SYMPOSION - EL PROXIMO SYMPOSIUM

VOLUME II 1958 NUMBER 2

The Written Symposia of the next edition will be devoted to the discussion of the following three main subjects:

- A. SPINDLE-SHAPED SQUAMOID CELLS
- B. STAINING TECHNIQUES OTHER THAN THE PAPANICOLAOU TECHNIQUE
- C. EFFECTS OF ADMINISTERED ESTROGENS

Deadlines for Contributors to These Symposia:

FOR MAIN SPEAKERS:

Main papers must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A. NOT LATER THAN: June 1, 1958.

FOR DISCUSSANTS:

THE DISCUSSANTS WILL RECEIVE THE PAPERS OF THE MAIN SPEAKERS FOR COMMENTS AS SOON AS THEY ARE AVAILABLE.

Discussions in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A. NOT LATER THAN: August 1, 1958.

Discussions in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: July 15, 1958, to permit translation and subsequent approval by author.

FOR CLOSING REMARKS BY MAIN SPEAKERS:

THE MAIN SPEAKERS WILL RECEIVE THE DISCUSSIONS FOR CLOSING REMARKS AS SOON AS THEY ARE AVAILABLE.

Closing remarks in the English language must REACH the Editorial Office NOT LATER THAN: September 15, 1958. Closing remarks in French, German or Spanish must REACH the Editorial Office NOT LATER THAN: September 5, 1958.

FOR EDITORIAL DETAILS CONCERNING THE PUBLICATIONS FOR ACTA CYTOLOGICA,
SEE INSIDE COVER AND PAGES 160 - 163 OF THIS EDITION.

If there is more than one speaker listed, they are listed in alphabetical order.
(up to date: May 22, 1958)

Symposium A.

DEFINITION, MORPHOLOGY, CYTOCHEMISTRY AND DIAGNOSTIC IMPORTANCE OF SPINDLE-SHAPED SQUAMOID CELLS (SNAKE CELLS, FIBER CELLS, SPINDLE CELLS)

1. Definition of Spindle-Shaped Squamoid Cells

RUTH M. GRAHAM, Buffalo, New York, U.S.A.
GEORGE N. PAPANICOLAOU, New York, New York, U.S.A.
J. PAUL PUNDEL, Luxembourg, Luxembourg
JAMES W. REAGAN, Cleveland, Ohio, U.S.A.
GEORGE L. WIED, Chicago, Illinois, U.S.A.

2. Morphology of Spindle-Shaped Squamoid Cells

PETER STOLL, Heidelberg, Germany
Disc.: W. Korte, Bonn, Germany
H. K. Zinser, Cologne, Germany

3. Cytochemistry of Spindle-Shaped Squamoid Cells

H. W. BOSCHANN, West-Berlin, Germany
C. HEROVICI, Villejuif, Seine, France
Disc.: H. Ebner, Heidelberg, Germany

4. Phasemicroscopy

PETER STOLL, Heidelberg, Germany
Disc.: H. K. Zinser, Cologne, Germany

5. Ultraviolet Microscopy

RUTH M. GRAHAM, Buffalo, New York, U.S.A.

6. Fluorescence Microscopy

JEAN BERGER, Basel, Switzerland
Disc.: H. K. Zinser, Cologne, Germany

7. Animal Experiments

EMMERICH von HAAM, Columbus, Ohio, U.S.A.

8. Colpomicroscopy

T. ANTOINE, K. BRANDL, V. GRUENBERGER, E. KOFLER and H. KREMER,
Vienna, Austria
WOLFGANG WALZ, Heidenheim, Brenz, Germany
Disc.: John F. Sheehan, Omaha, Nebraska, U.S.A.

9. Occurrence of Spindle-Shaped Squamoid Cells in Infections

J. ERNEST AYRE, Miami, Florida, U.S.A.
GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: H. W. Boschann, West-Berlin, Germany
C. Gompel, Brussels, Belgium
Julieta C. de Laguna, Mexico, D. F., Mexico

10. Occurrence of Spindle-Shaped Squamoid Cells in Dysplasia

JEAN de BRUX, Paris, France
MANUEL GALBIS, Valencia, Spain
RUTH M. GRAHAM, Buffalo, New York, U.S.A.
Disc.: Luis Montalvo Ruiz, Madrid, Spain
Violette Nuovo, Paris, France
Horst Smolka, Kiel, Germany

11. Occurrence of Spindle-Shaped Squamoid Cells in Carcinoma in Situ

JEAN de BRUX, Paris, France
MANUEL GALBIS, Valencia, Spain
RUTH M. GRAHAM, Buffalo, New York, U.S.A.
Disc.: J. Ernest Ayre, Miami, Florida, U.S.A.
F. Bajardi, Graz, Austria
Jean Berger, Basel, Switzerland
Henry Bonneau, Marseille, France

H. W. Boschann, West-Berlin, Germany
 Jorge Campos R. de C., Lima, Peru
 C. Gompel, Brussels, Belgium
 Julieta C. de Laguna, Mexico, D. F., Mexico
 Y. S. Song, Providence, Rhode Island, U. S. A.
 John J. Sullivan, Auckland, New Zealand
 H. K. Zinser, Cologne, Germany

12. Occurrence of Spindle-Shaped Squamoid Cells in Invasive Carcinoma

RUTH M. GRAHAM, Buffalo, New York, U. S. A.
 JULIETA C. de LAGUNA, Mexico, D. F., Mexico
 HORST SMOLKA, Kiel, Germany

Disc.: F. Bajardi, Graz, Austria
 H. W. Boschann, West-Berlin, Germany
 Jorge Campos R. de C., Lima, Peru
 C. Gompel, Brussels, Belgium

13. Occurrence of Spindle-Shaped Squamoid Cells in Non-genital Carcinoma

RUTH M. GRAHAM, Buffalo, New York, U. S. A.
 HEINZ GRUNZE, West-Berlin, Germany

Disc.: C. Gompel, Brussels, Belgium
 E. von Haam, Columbus, Ohio, U. S. A.
 Leopold G. Koss, New York, New York, U. S. A.
 Y. S. Song, Providence, Rhode Island, U. S. A.

14. Are Spindle-Shaped Squamoid Cells Suggestive of a Distinct Type of Carcinoma or of a Distinct Type of Maturity of Cells?

EDWARD E. SIEGLER, Garfield Heights, Ohio, U. S. A.
 THOMAS R. SIMON, Omaha, Nebraska, U. S. A.
 PETER STOLL, Heidelberg, Germany

Disc.: F. Bajardi, Graz, Austria
 H. W. Boschann, West-Berlin, Germany
 Jean de Brux, Paris, France
 Jorge Campos R. de C., Lima, Peru
 H. K. Fidler, Vancouver, B. C., Canada
 E. von Haam, Columbus, Ohio, U. S. A.
 Leopold G. Koss, New York, New York, U. S. A.
 Julieta C. de Laguna, Mexico, D. F., Mexico
 H. K. Zinser, Cologne, Germany

15. Are Spindle-Shaped Squamoid Cells Derived from the Surface of the Lesion?

HERBERT K. FIDLER, Vancouver, B. C., Canada
 HERBERT LAX, West-Berlin, Germany
 EDMUND SCHÜLLER, Vienna, Austria

Disc.: H. W. Boschann, West-Berlin, Germany
 Jean de Brux, Paris, France
 J. J. Sullivan, Auckland, New Zealand
 H. K. Zinser, Cologne, Germany

Symposium B.

ADVANTAGES AND DISADVANTAGES OF STAINING OR MICROSCOPIC TECHNIQUES
 OTHER THAN THE ORIGINAL PAPANICOLAOU METHOD

1. May Grünwald Giemsa

PAUL LOPES CARDOZO, Leyden, Holland
 FRANTIŠEK LUKSCH, Prague, Czechoslovakia

Disc.: Jean de Brux, Paris, France
 Heinz Grunze, West-Berlin, Germany
 Guillermo Terzano, Buenos Aires, Argentina

2. Hematoxylin Eosin

H. IGEL, Berlin, Germany

Disc.: Jacques Ferin, Louvain, Belgium
 Guillermo Terzano, Buenos Aires, Argentina

3. Shorr

CLARICE do AMARAL FERREIRA, Rio de Janeiro, Brazil
J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: Jorge Campos R. de C., Lima, Peru
Jacques Ferin, Louvain, Belgium
C. Gompel, Brussels, Belgium
Pierre Haour and V. Kogoy Bakie, Lyon, France
Camille J. P. Lichtfus, Strasbourg, France
Horst Smolka, Kiel, Germany
G. Terzano, Buenos Aires, Argentina

4. Modified Papanicolaou Techniques

C. HEROVICI, Villejuif, Seine, France
Disc.: H. W. Boschann, West-Berlin, Germany
G. Terzano, Buenos Aires, Argentina

5. Supravital Staining Techniques

WARREN R. LANG, Philadelphia, Pennsylvania, U.S.A.
Disc.: H. W. Boschann, West-Berlin, Germany

6. Karyologic Technique

LUIGI CUSMANO, Novara, Italy
Disc.: H. W. Boschann, West-Berlin, Germany
Jacques Ferin, Louvain, Belgium
Clarice do Amaral Ferreira, Rio de Janeiro, Brazil
Peter Stoll, Heidelberg, Germany
H. K. Zinser, Cologne, Germany

7. (a) Phasemicroscopy

GEORGE L. WIED, Chicago, Illinois, U.S.A.
Disc.: Jacques Ferin, Louvain, Belgium
Camille J. P. Lichtfus, Strasbourg, France
Peter Stoll, Heidelberg, Germany
H. K. Zinser, Cologne, Germany

(b) Anoptralmicroscopy

EDMUND SCHÜLLER, Vienna, Austria
Disc.: Peter Stoll, Heidelberg, Germany
H. K. Zinser, Cologne, Germany

8. Interference Microscopy

WALTER SANDRITTER, Frankfurt a. M., Germany
Disc.: Alvan G. Foraker, Jacksonville, Florida, U.S.A.
Robert C. Mellors, New York, New York, U.S.A.

9. Gallocyanin Chrome Alum

WALTER SANDRITTER, Frankfurt a. M., Germany

10. Feulgen Reaction and Histophotometric Technique as Applied to Cervical Smears

PIERRE HAOUR and C. CONTI, Lyon, France
Disc.: Roger Vokaer, Brussels, Belgium

Symposium C.

EFFECTS OF ADMINISTERED ESTROGENS (EXOGENOUS ESTROGENS)

1. Metabolism of Estrogens

ERNST JÜRGEN PLOTZ, Chicago, Illinois, U.S.A.
Disc.: Karl Junkmann, West-Berlin, Germany
Robert Wenner, Basel, Switzerland

2. **Methods of Determining the Effect of Administered Estrogens Other Than Exfoliative Cytology**
JACQUES FERIN, Louvain, Belgium
Disc.: E. von Haam, Columbus, Ohio, U.S.A.
Berthold B. Hochstaedt, Haifa, Israel
3. **Do Administered Estrogens Stimulate Growth and Maturation of the Epithelium Directly or Indirectly through Stimulation of the Nervous System and Enzyme System?**
JEAN de BRUX, Paris, France
Disc.: Leopold G. Koss, New York, New York, U.S.A.
4. **Cytological Criteria of Estrogen Effect**
MARCEL GAUDEFROY, Lille, France
WOLFGANG KORTE, Bonn, Germany
J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: J. Ernest Ayre, Miami, Florida, U.S.A.
H. W. Boschann, West-Berlin, Germany
Jacques Ferin, Louvain, Belgium
C. Gompel, Brussels, Belgium
E. von Haam, Columbus, Ohio, U.S.A.
Julietta D. de Laguna, Mexico, D.F., Mexico
H. E. Nieburgs, New York, New York, U.S.A.
G. Terzano, Buenos Aires, Argentina
Erica Wachtel, London, England
5. (a) **Histological Criteria of Estrogen Effect**
JEAN de BRUX, Paris, France
CLAUDE GOMPEL, Brussels, Belgium
HERBERT LAX, West-Berlin, Germany
Disc.: Jean Berger, Basel, Switzerland
H. Ebner and P. Stoll, Heidelberg, Germany
W. Korte, Bonn, Germany
- (b) **Histochemical and Histological Criteria of Estrogen Effect**
JOSÉ BOTELLA LLUSIA, F. NOGALES and LUIS MONTALVO RUIZ, Madrid, Spain
Disc.: H. W. Boschann, West-Berlin, Germany
H. Ebner, Heidelberg, Germany
E. von Haam, Columbus, Ohio, U.S.A.
H. Lax, West-Berlin, Germany
6. **Cytoplasmic Granules and Estrogen Effect**
J. ERNEST AYRE, Miami, Florida, U.S.A.
H. E. NIEBURGS, New York, New York, U.S.A.
Disc.: Jean de Brux, Paris, France
Jacques Ferin, Louvain, Belgium
E. von Haam, Columbus, Ohio, U.S.A.
7. **Cytolysis and Long-Term Administration of Estrogens**
HERBERT E. NIEBURGS, New York, New York, U.S.A.
Disc.: J. Ernest Ayre, Miami, Florida, U.S.A.
Clarice do Amaral Ferreira, Rio de Janeiro, Brazil
Violette Nuovo, Paris, France
J. Paul Pundel, Luxembourg, Luxembourg
8. **Does One Need to Gradually Increase the Dosage of Administered Estrogens in Patients under Long-term Estrogen Therapy in Order to Maintain High Proliferation, and Can One Induce a Consistent Intermediate Type of Proliferation by Administering Low Dosages of Estrogens?**
J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: John A. Finkbeiner, New York, New York, U.S.A.
9. **Is There a Condition Known or Is There a Time Period Known in Which the Vaginal Epithelium Does Not Respond with Marked Proliferation to Administered Estrogen?**
MARCEL GAUDEFROY, Lille, France
MARIO de BENNING KAMNITZER, Rio de Janeiro, Brazil
FRANTIŠEK LUKSCH, Prague, Czechoslovakia
J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: J. E. Ayre, Miami, Florida, U.S.A.
Jacques Ferin, Louvain, Belgium

John A. Finkbeiner, New York, New York, U.S.A.
B. B. Hochstaedt, Haifa, Israel
Camille J. P. Lichtfus, Strasbourg, France
Nilo P. Luz, Porto Alegre, Brazil
O. Nyklicek, Náchod, Czechoslovakia
Robert Wenner, Basel, Switzerland

10. Can the Karyopyknotic Index Be Influenced by Factors Other Than Hormonal? If So, What Are They?

MARCEL GAUDEFROY, Lille, France
A. MAJEWSKI, Halle, Saale, Germany
Disc.: Jean de Brux, Paris, France
Jacques Ferin, Louvain, Belgium
C. Gompel, Brussels, Belgium
B. B. Hochstaedt, Haifa, Israel
J. Paul Pundel, Luxembourg, Luxembourg
Erica Wachtel, London, England

11. Can the Karyopyknotic Index Be Influenced by Hormones Other Than Estrogens? If So, Which Hormones and to What Extent:

GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: H. W. Boschann, West-Berlin, Germany
Jacques Ferin, Louvain, Belgium
J. A. Finkbeiner, New York, New York, U.S.A.
C. Gompel, Brussels, Belgium
B. B. Hochstaedt, Haifa, Israel
J. Paul Pundel, Luxembourg, Luxembourg

12. Oral and Buccal Threshold Dosages of Administered Estrogens

GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: H. W. Boschann, West-Berlin, Germany
Jacques Ferin, Louvain, Belgium

13. Parenteral Threshold Dosages of Administered Estrogens

GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: H. W. Boschann, West-Berlin, Germany
Jacques Ferin, Louvain, Belgium
John A. Finkbeiner, New York, New York, U.S.A.
Wolfgang Korte, Bonn, Germany
Erica Wachtel, London, England

14. Does an Induced Proliferation of an Initially Atrophic Epithelium Persist Longer Than the Possible Duration of the Actual Effect of the Administered Estrogen?

GEORGE L. WIED, Chicago, Illinois, U.S.A.
Disc.: H. W. Boschann, West-Berlin, Germany
Jacques Ferin, Louvain, Belgium
B. B. Hochstaedt, Haifa, Israel
J. Paul Pundel, Luxembourg, Luxembourg

15. What Are the Relative Dosages of Androgens Plus Estrogens Which Suppress the Occurrence of the Highly Proliferated Cell Type?

H. WERNER BOSCHANN, West-Berlin, Germany
ROBERT B. GREENBLATT, Augusta, Georgia, U.S.A.
Disc.: Jacques Ferin, Louvain, Belgium
Pierre Haour and S. Puillet, Lyon, France
B. B. Hochstaedt, Haifa, Israel
J. Paul Pundel, Luxembourg, Luxembourg
Robert Wenner, Basel, Switzerland

16. What Are the Relative Dosages of Progestogens Plus Estrogens Which Suppress the Occurrence of the Highly Proliferated Cell Type?

JACQUES FERIN, Louvain, Belgium
ROBERT B. GREENBLATT, Augusta, Georgia, U.S.A.
Disc.: H. W. Boschann, West-Berlin, Germany
J. Paul Pundel, Luxembourg, Luxembourg

FUTURE SYMPOSIA

LES SYMPOSITIONS FUTURS - ZUKUNFTIGE SYMPOSIA - SIMPOSIUM FUTUROS

VOLUME II 1958 NUMBER 3

The Written Symposia of this edition will be devoted to the discussion of

ENDOMETRIAL CYTOLOGY

The subjects for discussion will deal with normal, functional and abnormal cytology of the endometrium as well as techniques for obtaining cytological material in this particular field of exfoliative cytology.

Deadlines For Contributors To The Symposia of This Edition

FOR BEING LISTED AS SPEAKER OR DISCUSSANT:

Members of the Academy or invited speakers who wish to be Main Speakers on any of the topics listed in the following programs should inform the Editorial Office AS SOON AS POSSIBLE, however NOT LATER THAN: July 1, 1958, about their intention to participate. Discussants may be listed until August 15, 1958.

FOR MAIN SPEAKERS:

Main papers in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U.S.A., NOT LATER THAN: September 1, 1958.

Main papers in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: August 10, 1958, to permit translation and subsequent approval by author.

FOR DISCUSSANTS:

THE DISCUSSANTS WILL RECEIVE THE PAPERS OF THE MAIN SPEAKERS FOR COMMENTS AS SOON AS THEY ARE AVAILABLE.

Discussions in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U.S.A., NOT LATER THAN: November 1, 1958.

Discussions in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: October 10, 1958, to permit translation and subsequent approval by author.

FOR CLOSING REMARKS BY MAIN SPEAKERS:

THE MAIN SPEAKERS WILL RECEIVE THE DISCUSSIONS FOR CLOSING REMARKS AS SOON AS THEY ARE AVAILABLE.

Closing remarks in the English language must REACH the Editorial Office NOT LATER THAN: December 15, 1958. Closing remarks in French, German or Spanish must REACH the Editorial Office NOT LATER THAN: December 1, 1958.

If there is more than one speaker listed, they are listed alphabetically.
The following is the preliminary list of speakers and discussants.

Symposium A.

ENDOMETRIAL CANCER CYTOLOGY

1. Histomorphology of Endometrial Carcinoma

HENRY BONNEAU, Marseille, France
JEAN de BRUX, Paris, France
WOLFGANG KORTE, Bonn, Germany
PETER STOLL, Heidelberg, Germany
Disc.: A. F. Anderson, Edinburgh, Scotland, U. K.
Hans Bettinger, Melbourne, Australia
H. Cramer, Frankfurt a. M., Germany

2. Histochemistry of Endometrial Carcinoma

MANUEL GALBIS, Valencia, Spain
MARGARET E. LONG, New York, New York, U. S. A.
Disc.: Jean de Brux, Paris, France
H. Cramer, Frankfurt a. M., Germany
P. F. Denoix, Villejuif, France

3. Cytomorphology of Normal Endometrium

H. WERNER BOSCHANN, West-Berlin, Germany

4. Cytochemistry of Normal and Abnormal Endometrium

H. WERNER BOSCHANN, West-Berlin, Germany
MANUEL GALBIS, Valencia, Spain
C. HEROVICI, Villejuif, Seine, France
Disc.: Pierre Haour, Lyon, France

5. Phasemicroscopy on Endometrial Cells

HANS KLAUS ZINSER, Cologne, Germany
Disc.: Junji Mizuno, Nagoya, Japan
Edmund Schüller, Vienna, Austria

6. Ultraviolet or Fluorescence Microscopy

- (a) Ultraviolet Microscopy
- (b) Fluorescence Microscopy

HORST SMOLKA, Kiel, Germany
Disc.: Jean Berger, Basel, Switzerland

7. Electron Microscopy on Endometrial Cells

KURT ATERMAN, Birmingham, England, U. K.
Disc.: Emmerich von Haam, Columbus, Ohio, U. S. A.

8. Differentiation of Endocervical and Endometrial Cells

HORST SMOLKA, Kiel, Germany
Disc.: H. Werner Boschann, West-Berlin, Germany
Emmerich von Haam, Columbus, Ohio, U. S. A.
Warren R. Lang, Philadelphia, Pennsylvania, U. S. A.
José Maria E. Mezzadra, Buenos Aires, Argentina
Guillermo Terzano, Buenos Aires, Argentina

9. Histocytes and Endometrial Cytology

GEORGE N. PAPANICOLAOU, New York, New York, U. S. A.
Disc.: Jean de Brux, Paris, France
H. E. Nieburgs, New York, New York, U. S. A.
Horst Smolka, Kiel, Germany

10. Cytometry on Normal and Abnormal Endometrial Cells

H. WERNER BOSCHANN, West-Berlin, Germany
HERBERT E. NIEBURGS, New York, New York, U. S. A.

11. Cytology of Endometritis

H. WERNER BOSCHANN, West-Berlin, Germany
Disc.: Jean de Brux, Paris, France

12. Cytology of Endometritis Tuberculosa

GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: J. Campos R. de C., Lima, Peru
H. Cramer, Frankfurt a. M., Germany
F. A. Ikle, St. Gallen, Switzerland

13. Cytology of Endometrial Polyps

JEAN de BRUX, Paris, France
GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: E. von Haam, Columbus, Ohio, U.S.A.
F. A. Ikle, St. Gallen, Switzerland
Y. S. Song, Providence, Rhode Island, U.S.A.

14. Cytology of Endometrial Adenocarcinoma

HENRY BONNEAU, Marseille, France
F. A. IKLE, St. Gallen, Switzerland
VIOLETTE NUOVO, Paris, France
ERICA WACHTEL, London, England, U.K.
Disc.: Jean de Brux, Paris, France
Manuel Galbis, Valencia, Spain
E. von Haam, Columbus, Ohio, U.S.A.
José Maria E. Mezzadra, Buenos Aires, Argentina
H. E. Nieburgs, New York, New York, U.S.A.
George H. Romberg, White Plains, New York, U.S.A.
Guillermo Terzano, Buenos Aires, Argentina

15. Cytology of Endometrial Adenocanthoma

HENRY BONNEAU, Marseille, France
EMMERICH von HAAM, Columbus, Ohio, U.S.A.
LEOPOLD G. KOSS, New York, New York, U.S.A.
Disc.: H. Werner Boschann, West-Berlin, Germany
Ruth M. Graham, Buffalo, New York, U.S.A.
F. A. Ikle, St. Gallen, Switzerland

16. Cytology of the Irradiated Uterine Cavity

EMMERICH von HAAM, Columbus, Ohio, U.S.A.
Disc.: P. F. Denolx, Villejuif, France
F. A. Ikle, St. Gallen, Switzerland

17. Cytology of Carcinoma in Situ of Endometrium

EMMERICH von HAAM, Columbus, Ohio, U.S.A.
LEOPOLD G. KOSS, New York, New York, U.S.A.
Disc.: A. F. Anderson, Edinburgh, Scotland, U.K.
Jean de Brux, Paris, France
Erica Wachtel, London, England, U.K.

18. Cytology of Sarcoma and Chorionepithelioma

JEAN de BRUX, Paris, France
RUTH M. GRAHAM, Buffalo, New York, U.S.A.
VIOLETTE NUOVO, Paris, France
J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: Manuel Galbis, Valencia, Spain
Y. S. Song, Providence, Rhode Island, U.S.A.

Symposium B.

TECHNIQUES FOR ENDOMETRIAL CYTOLOGY

1. Endometrial Aspiration Technique (Advantages and Disadvantages)

PIERRE HAOUR, Lyon, France
B. CORNELIS HOPMAN, Miami, Florida, U.S.A.
GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: H. Werner Boschann, West-Berlin, Germany
Giuseppe Dellepiane, Torino, Italy
Manuel Galbis, Valencia, Spain
F. A. Ikle, St. Gallen, Switzerland
Junji Mizuno, Nagoya, Japan
Violette Nuovo, Paris, France
George H. Romberg, White Plains, New York
Horst Smolka, Kiel, Germany

2. Endometrial Brush Technique (Advantages and Disadvantages)

H. WERNER BOSCHANN, West-Berlin, Germany
JOSE MARIA E. MEZZADRA, Buenos Aires, Argentina
HERBERT E. NIEBURGS, New York, New York, U.S.A.

3. Cervical Pessary. Collection Technique (Advantages and Disadvantages)

F. BAJARDI, Graz, Austria

4. Vaginal Smears for Detection of Endometrial Carcinoma (Diagnostic Accuracy)

RUTH M. GRAHAM, Buffalo, New York, U.S.A.
EMMERICH von HAAM, Columbus, Ohio, U.S.A.
ERICA WACHTEL, London, England, U.K.
Disc.: Marcel Gaudefroy, Lille, France
José Maria E. Mezzadra, Buenos Aires, Argentina
Violette Nuovo, Paris, France
L. Montalvo Ruiz, Madrid, Spain
G. Terzano, Buenos Aires, Argentina

5. Cervical Smears for Detection of Endometrial Carcinoma (Diagnostic Accuracy)

Disc.: A. F. Anderson, Edinburgh, Scotland, U.K.
H. W. Boschann, West-Berlin, Germany
J. M. E. Mezzadra, Buenos Aires, Argentina
L. Montalvo Ruiz, Madrid, Spain
G. Terzano, Buenos Aires, Argentina

6. Endocervical Smears for Detection of Endometrial Carcinoma (Diagnostic Accuracy)

Disc.: J. M. E. Mezzadra, Buenos Aires, Argentina
L. Montalvo Ruiz, Madrid, Spain
H. E. Nieburgs, New York, New York, U.S.A.
G. Terzano, Buenos Aires, Argentina

7. Are Degenerative Cell Changes in Endometrial Cells Due to Inadequate Preparation Technique?

J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: Jean de Brux, Paris, France
Ruth M. Graham, Buffalo, New York, U.S.A.
Pierre Haour, Lyon, France

8. Should One Routinely Make Intra-uterine Smears?

WARREN R. LANG, Philadelphia, Pennsylvania, U.S.A.
EDMUND SCHÜLLER, Vienna, Austria
Disc.: E. von Haam, Columbus, Ohio, U.S.A.

Symposium C.

ENDOMETRIAL HORMONAL CYTOLOGY

1. Endometrial Cytology During the Follicular Phase of the Cycle

H. WERNER BOSCHANN, West-Berlin, Germany
CLARICE do AMARAL FERREIRA, Rio de Janeiro, Brazil
HANNAH PETERS, Bombay, India
Disc.: Manuel Galbis, Valencia, Spain
J. M. E. Mezzadra, Buenos Aires, Argentina
Junji Mizuno, Nagoya, Japan
G. Terzano, Buenos Aires, Argentina

2. Endometrial Cytology During the Luteal Phase of the Cycle

H. WERNER BOSCHANN, West-Berlin, Germany
CLARICE do AMARAL FERREIRA, Rio de Janeiro, Brazil
HANNAH PETERS, Bombay, India
Disc.: Manuel Galbis, Valencia, Spain
F. A. Ikle, St. Gallen, Switzerland
J. M. E. Mezzadra, Buenos Aires, Argentina
G. Terzano, Buenos Aires, Argentina

3. Endometrial Cytology During and After the Menopause

H. WERNER BOSCHANN, West-Berlin, Germany
Disc.: G. H. Romberg, White Plains, New York

4. Endometrial Cytology in Endometrial Hyperplasia

ARTURO ANGEL ARRIGHI, Buenos Aires, Argentina

JEAN de BRUX, Paris, France

CLARICE do AMARAL FERREIRA, Rio de Janeiro, Brazil

MANUEL GALBIS, Valencia, Spain

Disc.: H. W. Boschann, West-Berlin, Germany

Ruth M. Graham, Buffalo, New York, U. S. A.

J. M. E. Mezzadra, Buenos Aires, Argentina

Herbert E. Nieburgs, New York, New York, U. S. A.

Y. S. Song, Providence, Rhode Island, U. S. A.

G. Terzano, Buenos Aires, Argentina

5. Endometrial Cytology Post Partum

H. WERNER BOSCHANN, West-Berlin, Germany

MANUEL GALBIS, Valencia, Spain

Disc.: Jean de Brux, Paris, France

Warren R. Lang, Philadelphia, Pennsylvania, U. S. A.

6. Endometrial Cytometry in Hormonal Evaluation

7. Diagnostic Accuracy of Hormonal Evaluation by Means of Endometrial Cytology

MANUEL GALBIS, Valencia, Spain

GEORGE H. ROMBERG, White Plains, New York

Disc.: H. W. Boschann, West-Berlin, Germany

Clarice do Amaral Ferreira, Rio de Janeiro, Brazil

8. Correlative Studies of Endometrial Cytology, Endometrial Histology and Vaginal Cytology

RUTH M. GRAHAM, Buffalo, New York, U. S. A.

L. MONTALVO RUIZ, Madrid, Spain

GUILLERMO TERZANO, Buenos Aires, Argentina

Disc.: H. W. Boschann, West-Berlin, Germany

Jean de Brux, Paris, France

H. E. Nieburgs, New York, New York, U. S. A.

9. Hormonal Evaluation of Patient with Endometrial Carcinoma (Vaginal Cytology and Other Hormonal Evaluation Techniques)

VIOLETTE NUOVO, Paris, France

Disc.: Ruth M. Graham, Buffalo, New York, U. S. A.

C. Herovici, Villejuif, Seine, France

J. M. E. Mezzadra, Buenos Aires, Argentina

C. Mossetti, Torino, Italy

H. E. Nieburgs, New York, New York, U. S. A.

G. Terzano, Buenos Aires, Argentina

Erica Wachtel, London, England, U. K.

VOLUME III 1959 NUMBER 1

The Written Symposia of this edition will be devoted to the discussion of

CYTOLOGY DURING PREGNANCY

The subjects for discussion will cover normal and disturbed pregnancy and cervical carcinoma during pregnancy.

Deadlines for Contributors to the Symposia of This Edition

FOR BEING LISTED AS SPEAKER OR DISCUSSANT:

Members of the Academy or invited speakers who wish to be Main Speakers or Discussants on any of the topics listed in the following program should inform the Editorial Office as soon as possible, however NOT LATER THAN: October 1, 1958, about their intention to participate.

FOR MAIN SPEAKERS:

Main papers in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A., NOT LATER THAN: December 1, 1958.

Main papers in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: November 10, 1958, to permit translation and subsequent approval by author.

FOR DISCUSSANTS:

THE DISCUSSANTS WILL RECEIVE THE PAPERS OF THE MAIN SPEAKERS FOR COMMENTS AS SOON AS THEY ARE AVAILABLE.

Discussions in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A., NOT LATER THAN: February 1, 1959.

Discussions in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: January 10, 1959, to permit translation and subsequent approval by author.

FOR CLOSING REMARKS BY MAIN SPEAKERS:

THE MAIN SPEAKERS WILL RECEIVE THE DISCUSSIONS FOR CLOSING REMARKS AS SOON AS THEY ARE AVAILABLE.

Closing remarks in the English language must REACH the Editorial Office NOT LATER THAN: April 1, 1959. Closing remarks in French, German or Spanish must REACH the Editorial Office NOT LATER THAN: March 10, 1959.

PRELIMINARY SUBJECTS FOR DISCUSSION
WITH PRELIMINARY LIST OF SPEAKERS AND DISCUSSANTS

Symposium A.

CANCER CYTOLOGY DURING PREGNANCY

1. The Squamous Columnar Junctions During Pregnancy

ARTURO ANGEL ARRIGHI, Buenos Aires, Argentina
Disc.: Alvan G. Foraker, Jacksonville, Florida, U. S. A.

2. Incidence of Cervical Carcinoma During Pregnancy

JORGE CAMPOS R. de C., Lima, Peru
PETER STOLL, Heidelberg, Germany
Disc.: A. F. Anderson, Edinburgh, Scotland, U. K.
George J. Andros, Philadelphia, Pennsylvania, U. S. A.
Ronald R. Greene, Chicago, Illinois, U. S. A.
Emmerich von Haam, Columbus, Ohio, U. S. A.
Edmund Schuller, Vienna, Austria

3. Prognosis of Cervical Carcinoma During Pregnancy as Compared with the Prognosis of Cervical Carcinoma in Non-pregnant Women

JOHN B. GRAHAM, Buffalo, New York, U. S. A.
HERBERT E. NIEBURGS, New York, New York, U. S. A.
EDMUND SCHÜLLER, Vienna, Austria
Disc.: L. Montalvo Ruiz, Madrid, Spain
Violette Nuovo, Paris, France
Peter Stoll, Heidelberg, Germany

4. Histomorphology of Cervical Carcinoma During Pregnancy

F. BAJARDI, Graz, Austria
JEAN de BRUX, Paris, France
JORGE CAMPOS R. de C., Lima, Peru
PETER STOLL, Heidelberg, Germany
Disc.: Henry Bonneau, Marseille, France
Alvan G. Foraker, Jacksonville, Florida, U. S. A.
Emmerich von Haam, Columbus, Ohio, U. S. A.
Herbert E. Nieburgs, New York, New York, U. S. A.

5. Histochemistry of Cervical Carcinoma During Pregnancy

C. HEROVICI, Villejuif, Seine, France

6. Cytochemistry of Exfoliated Cells During Pregnancy (Normal and Abnormal)

Disc.: H. Werner Boschann, West-Berlin, Germany
Alvan G. Foraker, Jacksonville, Florida, U. S. A.

7. Phasemicroscopy

8. Ultraviolet and Fluorescence Microscopy
 - (a) Ultraviolet Microscopy
 - (b) Fluorescence Microscopy
9. Electron Microscopy
10. Site of Cervical Carcinoma During Pregnancy as Compared with Site of Cervical Carcinoma in Non-Pregnant Women
11. Colposcopy During Pregnancy (on Normal and Abnormal Cervices)

WARREN R. LANG, Philadelphia, Pennsylvania, U. S. A.
HORST SMOLKA, Kiel, Germany
Disc.: Arturo Angel Arrighi, Buenos Aires, Argentina
F. Bajardi, Graz, Austria
Jean Berger, Basel, Switzerland
Otakar Nyklicek, Náchod, Czechoslovakia
12. Colpomicroscopy During Pregnancy (on Normal and Abnormal Epithelial Areas)

T. ANTOINE, K. BRANDL, V. GRÜNBERGER, E. KOFLER, H. KREMER, Vienna, Austria
WOLFGANG WALZ, Heidenheim, Brenz, Germany
13. Exfoliative Cytology of Infections During Pregnancy

EMMERICH von HAAM, Columbus, Ohio, U. S. A.
HERBERT E. NIEBURGS, New York, New York, U. S. A.
Disc.: L. Montalvo Ruiz, Madrid, Spain
14. Exfoliative Cytology of Dysplasia During Pregnancy

JORGE CAMPOS R. de C., Lima, Peru
EMMERICH von HAAM, Columbus, Ohio, U. S. A.
VIOLETTE NUOVO, Paris, France
GUILLERMO TERZANO, Buenos Aires, Argentina
Disc.: George J. Andros, Philadelphia, Pennsylvania, U. S. A.
Jean Berger, Basel, Switzerland
J. M. E. Mezzadra, Buenos Aires, Argentina
H. E. Nieburgs, New York, New York, U. S. A.
15. Exfoliative Cytology of Carcinoma in Situ During Pregnancy

H. WERNER BOSCHANN, West-Berlin, Germany
HERBERT E. NIEBURGS, New York, New York, U. S. A.
VIOLETTE NUOVO, Paris, France
Disc.: George J. Andros, Philadelphia, Pennsylvania, U. S. A.
Jean Berger, Basel, Switzerland
L. Montalvo Ruiz, Madrid, Spain
16. Exfoliative Cytology of Invasive Carcinoma During Pregnancy

H. WERNER BOSCHANN, West-Berlin, Germany
EMMERICH von HAAM, Columbus, Ohio, U. S. A.
Disc.: Jean Berger, Basel, Switzerland
Jorge Campos R. de C., Lima, Peru
F. A. Ikle, St. Gallen, Switzerland
17. Clinical Viewpoints with Special Consideration to Therapy and Time of Therapy for Lesions of the Uterine Cervix During Pregnancy

HORST SMOLKA, Kiel, Germany
Disc.: George J. Andros, Philadelphia, Pennsylvania, U. S. A.
Jean Berger, Basel, Switzerland
H. Werner Boschann, West-Berlin, Germany
Ronald R. Greene, Chicago, Illinois, U. S. A.
Edmund Schüller, Vienna, Austria
Peter Stoll, Heidelberg, Germany
18. Experiences in the Cytological Detection of Cervical Carcinoma in Multiparas, as Compared to Primiparas

HENRY BONNEAU, Marseille, France
19. Diagnostic Accuracy of Colposcopy as Compared to Cytology in the Detection of Cervical Carcinoma During Pregnancy

F. BAJARDI, Graz, Austria
 JEAN de BRUX, Paris, France
 Disc.: Jean Berger, Basel, Switzerland
 F. A. Ikke, St. Gallen, Switzerland
 Warren R. Lang, Philadelphia, Pennsylvania, U. S. A.

20. Should All Pregnant Women Be Screened for Carcinoma?

EMMERICH von HAAM, Columbus, Ohio, U. S. A.
 LEOPOLD G. KOSS, New York, New York, U. S. A.
 Disc.: George J. Andros, Philadelphia, Pennsylvania, U. S. A.
 H. Werner Boschann, West-Berlin, Germany
 Ronald R. Greene, Chicago, Illinois, U. S. A.
 Violette Nuovo, Paris, France
 Y. S. Song, Providence, Rhode Island, U. S. A.

21. Exfoliative Cytology of Cervical Decidual Reaction

JEAN de BRUX, Paris, France

22. Cervical Carcinoma Discovered Post Partum

RUTH M. GRAHAM, Buffalo, New York, U. S. A.

Symposium B.

HORMONAL CYTOLOGY DURING PREGNANCY AND POST PARTUM PERIOD

1. Normal Cytology During Pregnancy

EMMERICH von HAAM, Columbus, Ohio, U. S. A.
 HERBERT E. NIEBURGS, New York, New York, U. S. A.
 J. PAUL PUNDEL, Luxembourg, Luxembourg
 Disc.: Marcel Gaudefroy, Lille, France
 C. Herovici, Villejuif, Seine, France
 J. M. E. Mezzadra, Buenos Aires, Argentina

2. Incidence of Cytolysis in Smears During Pregnancy

MARCEL GAUDEFROY, Lille, France
 EMMERICH von HAAM, Columbus, Ohio, U. S. A.
 J. PAUL PUNDEL, Luxembourg, Luxembourg
 Disc.: Jacques Ferin, Louvain, Belgium
 John B. Graham, Buffalo, New York, U. S. A.
 Luis Montalvo Ruiz, Madrid, Spain
 Herbert E. Nieburgs, New York, New York, U. S. A.

3. Vaginal Flora of Pregnant Women as Compared to That of Non-pregnant Women

ARTURO ANGEL ARRIGHI, Buenos Aires, Argentina
 OTAKAR NYKLICEK, Náchod, Czechoslovakia
 Disc.: H. Werner Boschann, West-Berlin, Germany
 Jacques Ferin, Louvain, Belgium
 J. Paul Pundel, Luxembourg, Luxembourg

4. Vaginal Cytology as Prognostic Method In Pregnancy Disorders

MARCEL GAUDEFROY, Lille, France
 LUIS MONTALVO RUIZ, Madrid, Spain
 J. PAUL PUNDEL, Luxembourg, Luxembourg
 Disc.: Jacques Ferin, Louvain, Belgium
 Emmerich von Haam, Columbus, Ohio, U. S. A.
 František Horálek, Brno, Czechoslovakia
 J. M. E. Mezzadra, Buenos Aires, Argentina
 H. E. Nieburgs, New York, New York, U. S. A.
 Erica Wachtel, London, England, U. K.

5. Effect of Administered Estrogens on the Vaginal Epithelium in Pregnancy and Post Partum

MARIO de BENNING KAMNITZER, Rio de Janeiro, Brazil
 J. PAUL PUNDEL, Luxembourg, Luxembourg
 Disc.: Jacques Ferin, Louvain, Belgium
 Marcel Gaudefroy, Lille, France
 L. Montalvo Ruiz, Madrid, Spain

6. Effect of Administered Progestogens on the Vaginal Epithelium in Pregnancy and Post Partum

J. PAUL PUNDEL, Luxembourg, Luxembourg
GUSTAVE RIOTTON and O. STAMM, Geneva, Switzerland
Disc.: H. Werner Boschann, West-Berlin, Germany
Jacques Ferin, Louvain, Belgium
Marcel Gaudefroy, Lille, France
Horst Smolka, Kiel, Germany
Robert Wenner, Basel, Switzerland

7. Vaginal Cytology in the Diabetic Patient During Pregnancy

Disc.: J. Paul Pundel, Luxembourg, Luxembourg

8. Vaginal Cytology Shortly Prior to Term

CAMILLE LICHTFUS, Strasbourg, France
NILO P. LUZ, Porto Alegre, Brazil
LUIS MONTALVO RUIZ, Madrid, Spain
J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: František Horálek, Brno, Czechoslovakia
J. M. E. Mezzadra, Buenos Aires, Argentina
Otokar Nykliček, Náchod, Czechoslovakia
Gustave Riottton, Geneva, Switzerland

9. Vaginal Cytology After Rupture of Fetal Membranes

Disc.: Emmerich von Haam, Columbus, Ohio, U.S.A.
Violette Nuovo, Paris, France
J. Paul Pundel, Luxembourg, Luxembourg

10. Vaginal Cytology Post Partum and During Lactation Period

HERBERT E. NIEBURGS, New York, New York, U.S.A.
OTAKAR NYKLIČEK, Náchod, Czechoslovakia
Disc.: František Horálek, Brno, Czechoslovakia
Mario de Benning Kamnitzer, Rio de Janeiro, Brazil
Warren R. Lang, Philadelphia, Pennsylvania, U.S.A.
Jose Maria E. Mezzadra, Buenos Aires, Argentina
Violette Nuovo, Paris, France
J. Paul Pundel, Luxembourg, Luxembourg
Y. S. Song, Providence, Rhode Island, U.S.A.
Peter Stoll, Heidelberg, Germany

11. Vaginal Cytology in Abortion (Excluding Habitual Aborters)

Disc.: George J. Andros, Philadelphia, Pennsylvania, U.S.A.
H. Werner Boschann, West-Berlin, Germany
Mario de Benning Kamnitzer, Rio de Janeiro, Brazil
J. M. E. Mezzadra, Buenos Aires, Argentina
Luis Montalvo Ruiz, Madrid, Spain
H. E. Nieburgs, New York, New York, U.S.A.
G. Riottton, Geneva, Switzerland

12. Vaginal Cytology in Habitual Aborters

Disc.: Giuseppe Delleplane, Torino, Italy
Marcel Gaudefroy, Lille, France

13. Vaginal Cytology in Ectopic Pregnancy

ARTURO ANGEL ARRIGHI, Buenos Aires, Argentina
H. WERNER BOSCHANN, West-Berlin, Germany

14. Diagnosis of Pregnancy by Means of Cytology

HERBERT E. NIEBURGS, New York, New York, U.S.A.
J. PAUL PUNDEL, Luxembourg, Luxembourg
Disc.: Marcel Gaudefroy, Lille, France
František Horálek, Brno, Czechoslovakia

Additions

15. The Rate of Production of Endogenous Hormones in Pregnancy

JOSEPH ZANDER, Cologne, Germany

16. Urinary Cytology During Pregnancy

GUILLERMO TERZANO and ARTURO ANGEL ARRIGHI, Buenos Aires, Argentina

17. Epithelial and Connective Tissue During Pregnancy

18. Cytohormonal Cell Type in Cases of Cervical Carcinoma During Pregnancy

19. Hormonal Basis for Pregnancy Cytology

O. STAMM and GUSTAVE RIOTTON, Geneva, Switzerland

20. Correlative Studies of Vaginal, Urethral, Urinary and Oral Cytology During Various Periods of Normal Pregnancy

PIERO SORA, Pavia, Italy

VOLUME III 1959 NUMBER 2

The Written Symposia of this edition will be devoted to the discussion of two main subjects:

A. RADIATION CELL CHANGES

B. SR-CELLS

Deadlines for Contributors to The Symposia of This Edition:

FOR BEING LISTED AS SPEAKER OR DISCUSSANT:

Members of the Academy or invited speakers who wish to be Main Speakers or Discussants on any of the topics listed in the following program should inform the Editorial Office as soon as possible, however, NOT LATER THAN: December 1, 1958, about their intention to participate.

FOR MAIN SPEAKERS:

Main papers in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U.S.A. NOT LATER THAN: March 1, 1959.

Main papers in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: February 10, 1959, to permit translation and subsequent approval by author.

FOR DISCUSSANTS:

THE DISCUSSANTS WILL RECEIVE THE PAPERS OF THE MAIN SPEAKERS FOR COMMENTS AS SOON AS THEY ARE AVAILABLE.

Discussions in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U.S.A., NOT LATER THAN: May 15, 1959.

Discussions in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: April 25, 1959, to permit translation and subsequent approval by author.

FOR CLOSING REMARKS BY MAIN SPEAKERS:

THE MAIN SPEAKERS WILL RECEIVE THE DISCUSSIONS FOR CLOSING REMARKS AS SOON AS THEY ARE AVAILABLE.

Closing remarks in the English language must REACH the Editorial Office NOT LATER THAN: August 1, 1959. Closing remarks in French, German or Spanish must REACH the Editorial Office NOT LATER THAN: July 10, 1959.

Symposium A

DEFINITION, MORPHOLOGY, CYTOCHEMISTRY, DIAGNOSTIC AND PROGNOSTIC IMPORTANCE OF RADIATION CHANGES OF BENIGN CELLS (RR-CELLS) AND OF TUMOR CELLS IN THE FEMALE GENITAL TRACT

1. Definition
2. Morphology
3. Cytochemistry of irradiated cells

4. Phasemicroscopy
5. UV-microscopy
6. Fluorescence microscopy
7. Electron microscopy
8. Colpomicroscopy of irradiated cervix
9. Colposcopy of irradiated cervix
10. Tissue culture
11. Animal experiments
12. Minimal r-dosages of X-ray or minimal mg-E-h dosages of radium which produce radiation cell changes
13. Histological criteria or radiation response
14. Prognosis by means of histology (method)
 - (a) prognosis based on tumor type and on presence of lymphatic emboli
 - (b) prognosis based on serial biopsies
15. Do serial biopsies disturb the healing process of the irradiated cervical carcinoma?
16. Prognosis by means of exfoliative cytology (method)
17. Comparative studies of exfoliative cytology and histology after irradiation
18. Does irradiation influence the Karyopyknotic Index?
19. Recurrent carcinoma and presence of radiation cell changes
20. Is there a difference in cellular response (concerning onset of response, quality and quantity) if irradiation has been only by X-ray, only by radium, or by both? If so, what are the differences?
21. Are the degree and the duration of radiation cell changes dependent on the dosage of irradiation, or the period of time over which it is given?
22. Can the cytological or histological response to irradiation be influenced by medication or other factors?
23. Clinical viewpoint: Should a lesion be treated with surgery after it has been shown cytologically that there is not any--or only little--radiation response present? If so, when should surgery be performed?
24. Clinical viewpoint: Radical surgery in cases of recurrent cervical carcinoma after irradiation
25. Which clinical factors are associated with a good cytological response?
26. Cytological response as compared with local primary healing and with local recurrence and metastases of cervical carcinoma
27. Comparison of radiation cell changes in exfoliated vaginal cells and exfoliated cells elsewhere, e.g., oral carcinoma
28. How soon after the beginning of therapy can the radiation response be judged accurately?
29. Results of RR-cell studies (minimal requirements for participants in this topic: 100 patients studied over a period of 5 years)

Symposium B

DEFINITION, MORPHOLOGY, CYTOCHEMISTRY, DIAGNOSTIC AND PROGNOSTIC IMPORTANCE OF SR-CELLS (SENSITIVITY RESPONSE) FROM THE FEMALE GENITAL TRACT PRIOR TO IRRADIATION

1. Definition of SR-Cells
2. Morphology of SR-Cells
3. Cytochemistry of SR-Cells

4. Phasemicroscopy
5. UV-microscopy
6. Fluorescence microscopy
7. Electron microscopy
8. Animal experiments
9. Prognosis of carcinoma by determination of SR-Cell count (method only)
10. From where do SR-Cells derive (histological observations)?
11. Morphologic differences of SR-Cells as compared with squamous cells of deep layers and histiocytes
12. Occurrence of SR-Cells in the various stages (0, 1, 2, 3, 4) of cervical carcinoma
13. Occurrence of SR-Cells in patients with cervical carcinoma and in apparently healthy females in regard to their hormonal condition
14. Can the occurrence of SR-Cells be influenced by steroid hormone administration? If so, what are they and in which dosages?
15. Can the occurrence of SR-Cells be influenced by vaccines? If so, what are these vaccines?
16. Can the occurrence of SR-Cells be influenced by other substances or factors than steroid hormones or vaccine? If so, what are these factors?
17. Results of prognostic studies of SR-Cells (minimal requirements for participants in this topic: 50 patients studied over a period of 3 years)

VOLUME III 1959 NUMBER 3

The Written Symposia of this edition will be devoted to the discussion of two main subjects:

- A. EFFECTS OF ENDOGENOUS ESTROGENS ON THE VAGINAL EPITHELIUM
- B. VARIOUS TECHNIQUES OF OBTAINING MATERIAL FOR CYTOLOGICAL STUDIES

Deadlines for Contributors to the Symposia of this Edition:

FOR ADDITIONS TO THE PROGRAM:

Members of the Academy or invited speakers may have further topics added to the program below by writing to the Editorial Office NOT LATER THAN: September 1, 1958. Those who add additional topics to the following list should, however, either agree to be Main Speakers on the particular topics added or submit to the Editorial Office the names of individuals who would agree to contribute.

FOR BEING LISTED AS SPEAKER OR DISCUSSANT:

Members of the Academy or invited speakers who wish to be Main Speakers or Discussants on any of the topics listed in the following program should inform the Editorial Office as soon as possible, however, NOT LATER THAN: March 1, 1959, about their intention to participate.

FOR MAIN SPEAKERS:

Main papers in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A., NOT LATER THAN: July 1, 1959.

Main papers in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: June 10, 1959, to permit translation and subsequent approval by author.

FOR DISCUSSANTS:

THE DISCUSSANTS WILL RECEIVE THE PAPERS OF THE MAIN SPEAKERS FOR COMMENTS AS SOON AS THEY ARE AVAILABLE.

Discussions in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A. NOT LATER THAN: September 15, 1959.

Discussions in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: August 20, 1959, to permit translation and subsequent approval by author.

FOR CLOSING REMARKS BY MAIN SPEAKERS:

THE MAIN SPEAKERS WILL RECEIVE THE DISCUSSIONS FOR CLOSING REMARKS AS SOON AS THEY ARE AVAILABLE.

Closing remarks in the English language must REACH the Editorial Office NOT LATER THAN: December 1, 1959. Closing remarks in French, German or Spanish must REACH the Editorial Office NOT LATER THAN: November 10, 1959.

Symposium A

EFFECTS OF ENDOGENOUS ESTROGENS ON THE VAGINAL EPITHELIUM

1. Introduction. Sources of endogenous estrogens
2. Histological changes in the epithelium and connective tissue of the vagina and ectocervix as a result of physiological presence, deficiency or absence of endogenous estrogen stimulation
3. Cytological changes of vaginal and ectocervical epithelium as a result of physiological presence, deficiency or absence of endogenous estrogen stimulation
4. Cytological changes of the endocervical epithelium as a result of physiological presence, deficiency or absence of endogenous estrogen stimulation
5. Cytochemistry of exfoliated atrophic cells (basal-parabasal cells)
6. Cytochemistry of exfoliated intermediate cells
7. Cytochemistry of exfoliated superficial cells and anucleate squames
8. Cytochemistry of cytoplasmic granules
9. Terminology of cytological smears in regard to estrogen effect
10. Is the Karyopyknotic Index a measurement of endogenous estrogens?
11. Is the presence of epithelial atrophy a definite criterion of lack of estrogen production?
12. Cellular degeneration (cytolysis, autolysis) and endogenous estrogens
13. The value of exfoliative cytology in the diagnosis of ovulation
14. The value of exfoliative cytology in the diagnosis of follicular persistency
15. Vaginal cytology in hysterectomized patients, with special regard to presence or absence of ovarian function after hysterectomy
16. The value of exfoliative cytology in the diagnosis of hormone-producing tumors
17. The level of endogenous estrogens in patients with cervical carcinoma as demonstrated by methods other than exfoliative cytology
18. The cell type (normal squamous cells only) in vaginal smears of patients with cervical carcinoma
19. The level of endogenous estrogens in patients with ovarian or endometrial carcinoma as demonstrated by methods other than exfoliative cytology
20. The cell type (normal squamous cells only) in vaginal smears of patients with ovarian or endometrial carcinoma
21. The level of endogenous estrogens in patients with breast carcinoma as demonstrated by methods other than exfoliative cytology
22. The cell type (normal squamous cells only) in vaginal smears of patients with untreated, treated and recurrent breast carcinoma (excluding those cases receiving hormone therapy, or who have undergone extirpation of endocrine organs)
23. The cell type (normal squamous cells only) in vaginal smears of patients with breast carcinoma after ovariectomy (those treated by sex steroids and those without additional sex steroid administration considered separately)
24. The cell type (normal squamous cells only) in vaginal smears of patients with breast carcinoma after adrenalectomy with or without additional ovariectomy (those treated by sex steroids and those without additional sex steroid administration considered separately)

25. The cell type (normal squamous cells only) in vaginal smears of patients with breast carcinoma after hypophysectomy with or without additional adrenalectomy and/or ovariectomy (those treated by sex steroids and those without additional sex steroid administration considered separately)
26. Ovarian function following pelvic irradiation, as assessed by vaginal smears

Symposium B

ADVANTAGES AND DISADVANTAGES OF VARIOUS TECHNIQUES OF OBTAINING MATERIAL FOR ROUTINE CYTOLOGICAL EXAMINATIONS

1. Review of techniques of vaginal smears
2. Review of techniques of cervical smears
3. Review of techniques of endocervical smears
4. Review of techniques of intrauterine smears
5. Material obtained by pipette from vaginal pool only, without visualization of cervix
6. Material obtained by pipette from vaginal pool only, after insertion of speculum
7. Material obtained by vaginal tampon only
8. Material obtained by cervical scraping only
9. Material obtained by two techniques: (a) vaginal smears (b) cervical smears
10. Material obtained by two techniques: (a) cervical smear (b) endocervical smear
11. Material obtained by three techniques: (a) vaginal smear (b) cervical smear (c) endocervical smear
12. Material obtained by sponge-biopsy
13. If one prepared more than one smear per patient, could one prepare these smears on one glass slide or does one have to put them on separate glass slides?

VOLUME IV 1960 NUMBER 1

The Written symposia of this edition will probably be devoted to the discussion of

CARCINOMA IN SITU AND SO-CALLED "PRECANCEROUS" LESIONS

Deadlines for Contributors to the Symposia of this Edition:

FOR ADDITIONS TO AND CHANGES OF THE PROGRAM:

Members of the Academy or guest speakers are invited to suggest individual topics for addition to the program below by writing to the Editorial Office NOT LATER THAN: December 1, 1958.

FOR BEING LISTED AS SPEAKER OR DISCUSSANT:

Members of the Academy or invited speakers who wish to be Main Speakers or Discussants on any of the topics listed in the following program should so inform the Editorial Office after the preliminary program (with individual topics) is published in Vol. II, No. 3, 1958.

FOR MAIN SPEAKERS:

Main papers in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U.S.A., NOT LATER THAN: October 1, 1959.

Main papers in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: September 10, 1959, to permit translation and subsequent approval by author.

FOR DISCUSSANTS:

THE DISCUSSANTS WILL RECEIVE THE PAPERS OF THE MAIN SPEAKERS FOR COMMENTS AS SOON AS THEY ARE AVAILABLE

Discussions in the English language must REACH ACTA CYTOLOGICA, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U.S.A. NOT LATER THAN: December 15, 1959.

Discussions in French, German or Spanish must REACH ACTA CYTOLOGICA, Editorial Office NOT LATER THAN: November 25, 1959, to permit translation and subsequent approval by author.

FOR CLOSING REMARKS BY MAIN SPEAKERS:

THE MAIN SPEAKERS WILL RECEIVE THE DISCUSSIONS FOR CLOSING REMARKS AS SOON AS THEY ARE AVAILABLE.

Closing remarks in the English language must REACH the Editorial Office NOT LATER THAN: March 1, 1960. Closing remarks in French, German or Spanish must REACH the Editorial Office NOT LATER THAN: February 10, 1960.

Preliminary Skeleton Program:

A. DEFINITIONS (SUPPORTED BY PHOTOMICROGRAPHS)

Definitions of: Normal Epithelium
Ectopy and Ectropion
Epidermization and Atypical Epidermization
Leukoplakia and Parakeratosis
Reserve Cell Hyperplasia
Basal Cell Hyperactivity
Abnormal Epithelium (Zürich)
Undifferentiated Regenerative Epithelium
Dysplasia
Carcinoma in Situ
Early Invasive Carcinoma (Microcarcinoma)
Invasive Carcinoma

(These definitions are prepared by a special panel and are not necessarily intended to become an international standard terminology, but are intended only as a basis for the Symposium on Carcinoma in Situ of Vol. IV, No. 1, 1960.

B. NON-MALIGNANT, QUESTIONABLE PRE-MALIGNANT AND MALIGNANT CERVICAL LESIONS

Cervicitis and Endocervicitis: Histomorphology, Histochemistry, Exfoliative cytology, Cytochemistry, Colposcopy, Colpomicroscopy, Clinical Viewpoints, and Interrelationship with Cervical Carcinoma.

Ectopy, Ectropion and Epidermization: Histomorphology, Histochemistry, Exfoliative Cytology, Cytochemistry, Colposcopy, Colpomicroscopy, Clinical Viewpoints, and Interrelationship with Cervical Carcinoma.

Leukoplakia: Histomorphology, Histochemistry, Exfoliative Cytology, Cytochemistry, Colposcopy, Colpomicroscopy, Clinical Viewpoints, and Interrelationship with Cervical Carcinoma.

Reserve Cell Hyperplasia, Basal Cell Hyperactivity, Undifferentiated Regenerative Epithelium, Abnormal Epithelium and Dysplasia: Histomorphology, Histochemistry, Exfoliative Cytology, Cytochemistry, Colposcopy, Colpomicroscopy, Clinical Viewpoints, and Interrelationship with Cervical Carcinoma.

Carcinoma in Situ: Histomorphology, Histochemistry, Exfoliative Cytology, UV- and Fluorescence Microscopy, Electron Microscopy, Phasemicroscopy, Cytochemistry, Animal Experiments, Tissue Culture, Clinical Viewpoints, Incidence and Morphogenesis.

C. PANEL CONFERENCE ON CYTOLOGICAL SMEARS AND HISTOLOGICAL SECTIONS

30 cytological specimens and 30 histological sections will be circulated to 10 cytologists and 10 pathologists.

VOLUME IV 1960 NUMBER 2

The Written Symposia of this edition will probably be devoted to three main subjects:

- A. ENDOCERVICAL ADENOCARCINOMA
- B. TRAINING OF CYTOTECHNICIANS
- C. EFFECTS OF PROGESTATIONAL AGENTS ON THE VAGINAL EPITHELIUM

Deadlines for Contributors to the Symposia of this Edition:

SUGGESTION OF TOPICS FOR THE PROGRAM:

Members of the Academy or guest speakers are invited to suggest individual topics in addition to the above program by writing to the Editorial Office **NOT LATER THAN: March 1, 1959.**

FOR BEING LISTED AS SPEAKER OR DISCUSSANT:

Members of the Academy or invited speakers who wish to be Main Speakers or Discussants on any of the topics listed in the following program should inform the Editorial Office about their intention to participate after the preliminary program (with individual topics) is published in Vol. III, No. 1, 1959.

FOR MAIN SPEAKERS:

Main papers in the English language must **REACH ACTA CYTOLOGICA**, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A., **NOT LATER THAN: January 1, 1960.**

Main papers in French, German or Spanish must **REACH ACTA CYTOLOGICA**, Editorial Office **NOT LATER THAN: December 10, 1959** to permit translation and subsequent approval by author.

FOR DISCUSSANTS:

THE DISCUSSANTS WILL RECEIVE THE PAPERS OF THE MAIN SPEAKERS FOR COMMENTS AS SOON AS THEY ARE AVAILABLE.

Discussions in the English language must **REACH ACTA CYTOLOGICA**, Editorial Office, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A. **NOT LATER THAN: March 1, 1960.**

Discussions in French, German or Spanish must **REACH ACTA CYTOLOGICA**, Editorial Office **NOT LATER THAN: February 10, 1960** to permit translation and subsequent approval by author.

FOR CLOSING REMARKS BY MAIN SPEAKERS:

THE MAIN SPEAKERS WILL RECEIVE THE DISCUSSIONS FOR CLOSING REMARKS AS SOON AS THEY ARE AVAILABLE.

Closing remarks in the English language must **REACH** the Editorial Office **NOT LATER THAN: May 1, 1960.** Closing remarks in French, German or Spanish must **REACH** the Editorial Office **NOT LATER THAN: April 10, 1960.**

NON-MEMBERS WHO WISH TO PARTICIPATE IN THE WRITTEN SYMPOSIA AND WHO HAVE NOT YET RECEIVED AN INVITATION TO PARTICIPATE ARE REQUESTED TO WRITE TO THE EDITORIAL OFFICE INDICATING THE SUBJECT TO WHICH THEY WISH TO CONTRIBUTE.

SYMPOSIA UNDER CONSIDERATION

The following symposia have been suggested for consideration and are not listed in the order of preference or chronology. Members of the International Academy of Gynecological Cytology are invited to inform the Editorial Office in which of the above symposia they would be most interested, so that an order of preference may be tentatively arranged.

1. Symposium on Tadpole-Shaped Squamoid Cells.
2. Symposium on Organization of Laboratory of Exfoliative Cytology.
3. Symposium on Cytological Studies in Amenorrhea.
4. Symposium on Cytology of Ascitic Fluid.
5. Symposium on Cytology of Malignant Tumors of Ovary and Tubes.
6. Symposium on Extra-Genital Cytology of Metastatic Gynecological Lesions.
7. Symposium on Phasemicroscopy and Other Special Microscopic Techniques.
8. Symposium on Training of Exfoliative Cytologists.
9. Symposium on Cytological Changes due to Microbiological Factors.
10. Symposium on the Comparative Diagnostic Accuracy, Efficiency and Specificity of Techniques for Detection of Carcinoma.
11. Symposium on Histiocytes.
12. Symposium on Cytological Microphotography.
13. Symposium on Cytological Terminology for Hormonal Evaluation.
14. Symposium on Quantitative Cytochemistry of Exfoliated Cells.
15. Symposium on Sex Chromatin.

ABSTRACTS

This portion of ACTA CYTOLOGICA includes abstracts (approximately 150-300 word each) of papers, either recently published or accepted for publication. Members of the Academy are requested to submit their own abstracts. Papers by non-members may be included upon invitation. Authors are requested to forward to the Editorial Office a complete manuscript or reprint of the original paper together with their abstract. All figures should be included.

The Editorial Office maintains a *free Literature Service* for distribution of available papers to Academy members. Members are requested to send a minimum of 10 copies, if possible, 150 copies of published papers to the Editorial Office. The Literature Service will make photostatic reproductions of papers which are unobtainable for Members whenever possible.

RÉSUMÉS

Cette rubrique des ACTA CYTOLOGICA contient des résumés (d'environ 150 à 300 mots) de publications et qui ont été récemment publiées ou acceptées pour la publication. Tous les membres sont priés de présenter leurs résumés *en anglais*. Sur invitation, des publications de non-membres pourront également être résumées. Les auteurs sont invités à faire parvenir au bureau de rédaction, en même temps que leur résumé, un manuscrit complet comprenant toutes les illustrations ou un tiré-à-part du travail original.

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ZUSAMMENFASSENDE BERICHTE AUS DER ZYTOLOGISCHEN LITERATUR

Dieser Teil der ACTA CYTOLOGICA beinhaltet zusammenfassende Berichte (von etwa 150 bis 300 Worten) von wissenschaftlichen Veröffentlichungen, die entweder schon publiziert oder zur Publikation angenommen worden sind. Die Mitglieder der Akademie sind hiermit eingeladen, Zusammenfassungen ihrer Arbeiten (*in englischer Sprache*) an die Schriftleitung zu senden. Arbeiten von Nicht-Mitglieder können auf Einladung ebenfalls verwendet werden. Die Autoren sind gebeten, der Schriftleitung das vollständige Manuskript mit allen Abbildungen oder den Sonderdruck der Arbeit einzureichen.

Die Schriftleitung unterhält einen *kostenlosen Literatur-Dienst* zur Verteilung von wissenschaftlichen Arbeiten an die Mitglieder. Die Mitglieder der Akademie sind gebeten, der Schriftleitung mindestens 10, möglichst aber 150 Kopien von Sonderdrucken ihrer Arbeiten einzureichen. Der Literatur-Dienst steht auch nach Möglichkeit zur Herstellung von Lichtkopien von schwer zugänglichen Arbeiten zur Verfügung.

RESUMENES

Esta parte de ACTA CYTOLOGICA incluye resúmenes (aproximadamente de 150-300 palabras cada uno) de los trabajos, bien publicados recientemente, o aceptados para su publicación. Todos los Miembros de la Academia deberán enviar sus resúmenes *en inglés*. Previa invitación podrán ser incluidos trabajos realizados por no-miembros. Se requiere a los autores para que envíen a la Oficina Editorial, junto con su resumen, un manuscrito completo o separata del trabajo original. Deberán incluirse todas las figuras.

La Oficina Editorial mantiene un *Servicio de Literatura, gratuito*, para la distribución de trabajos disponibles entre los Miembros de la Academia. Se ruega a los Miembros que envíen a la Oficina Editorial un mínimo de 10 copias de sus trabajos publicados y, a ser posible, 150 copias. El Servicio de Literatura hará, siempre que ello sea posible, reproducciones fotostáticas de los trabajos que los miembros no puedan obtener.

CANCER CYTOLOGY

POST-MENOPAUSAL BLEEDING

T. L. ADAMSON, R. BROWN and P. R. MYERSCOUGH - *Journal of Obstetrics and Gynecology of the British Empire* 64: 566-572, 1957

Among 1,018 cases of post-menopausal bleeding, including those where the symptom was slight and transient, the proportion found to be due to malignant disease was less than a third. The figure (28%) is almost identical with that found by Sutherland and McBride (1954) among 1000 cases of post-menopausal bleeding in Glasgow. Further, the detailed list in the present paper of the frequency of each of the causes of bleeding is remarkably similar to that given by Sutherland and McBride. This indicated that the findings are representative of current gynecological experience in this country.

While the proportion of malignant cases is much less than that usually quoted, this detracts nothing from the urgency of the symptom. In this series, unfortunately, long intervals had elapsed in many cases before treatment was sought and in a fifth of the cases the delay exceeded 6 months. In several patients with malignant disease the condition was too advanced for even palliative treatment to be given.

The longer the interval after the menopause, the greater is the probability that the bleeding is due to cancer.

A full curettage is still necessary in all cases since cytological examination of cervical or vaginal smears cannot confidently exclude the presence of endometrial cancer. (From author's conclusions.)

MAMMARY CYTOLOGY IN THE EARLY DIAGNOSIS OF BREAST PATHOLOGY

CLARICE DO AMARAL FERREIRA and CARLOS A. ZANOTTA - *Anais Brasileiros de Ginecologia* 44: 351-358, 1957

The authors report their first systematic study of mammary cytology. Three hundred and eight patients, chosen from those who were being treated in the Breast Pathology Department of the "Instituto de Ginecologia," were examined. Among these cases are included those of normal breasts, mastitis, fibroadenomas, cysts, other mild conditions and cancer. The main cytological pictures of each case are presented. To collect material for examination the authors used mammary squeezing and smearing outer layers of the biopsy specimen. A classification of these several cytological aspects is presented. (Authors' abstract.)

A STATISTICAL SURVEY OF A NINE YEAR PERIOD OF CYTOLOGICAL EXAMINATIONS

CLARICE DO AMARAL FERREIRA - *Anais Brasileiros de Ginecologia* 44: 309-316, 1957

A statistical survey of 8,325 patients seen at the "Ambulatorio Preventivo do Cancer" (Instituto de Ginecologia, Universidade do Brasil) during a 9 year period is presented.

Cervical smears for cytological study were prepared on 7,313 patients. The cytological contents were classified according to Papanicolaou's groups, but under four groups: I, II, III and IV (including V).

Four thousand six hundred and fifty-six patients were classified as Group I: 96.58% were confirmed negative for cancer by colposcopy and/or biopsy; 2.57% were not confirmed for cancer and 0.36% proved to be cancer.

Of the 2,016 patients classified as Group II, 97.96% were confirmed negative for cancer by colposcopy and/or biopsy; 1.53% were not confirmed for cancer and 0.44% proved to be cancer.

Group III contained 232 cases: 28.44% were confirmed negative for cancer; 23.57% proved to be cancer and 43.96% had no biopsy for confirmation.

Group IV classification was given to 409 patients; 89.96% proved to be cancer; 6.84% had no biopsy for confirmation and 3.17% proved not to be cancer by pathology.

Of the 7,313 cases submitted for cytological examination, 0.35% were false negative, 0.86% were false suspicious and 0.17% were false positive for cancer. (Author's summary.)

THE MORPHOLOGY OF PRECLINICAL CANCER OF THE CERVIX (ZUR MORPHOLOGIE DES PRAE-KLINISCHEN GEBÄRMUTTERHALSKARZINOMS)

F. BAJARDI - Der Krebsarzt 12:246-254, 1957.

Investigations were made in order to ascertain the various types of surface cancers in a wide field of histological material of "preclinical" cancers of the cervix. In the course of the study, a number of different types were observed which correspond in their cytomorphology to well-known forms of distinct, invasive, undifferentiated carcinomatous squamous epithelia. The following forms could be distinguished:

- 1) common, immature-cell surface carcinomas,
- 2) small-cell surface carcinomas,
- 3) pre-invasive basal-cell carcinomas,
- 4) spindle-cell surface carcinomas,
- 5) pronounced polymorph-cell surface carcinomas, and
- 6) maturing surface carcinomas.

In the last form in particular, a certain precaution in diagnosing "cancer" is indicated since a confusion with reversible epithelial lesions such as an "unquiet" or "atypical" squamous epithelium (Glatthaar) is possible. Yet, in our opinion, there can be no doubt about the existence of differentiated forms of surface carcinoma (Author's abstract.)

THE CYTOLOGICAL PRESENTATION OF ENDOMETRIAL CARCINOMA

JOHN W. BERG and GRACE DURFEE - Cancer 2: 158-172, 1958

Detection of the majority of endometrial cancers is possible by examination of routine vaginal smears. To accomplish this, the screener and the cytologist must be aware of the appearance of exfoliated endometrial cells, the ways in which they differ from histological cancer and the common varieties of metaplastic changes. The paper does not deal with the clinically obvious endometrial cancers, but rather with the first recognizable cancer cells present in the smears, and the importance of the other smear constituents, e.g., histiocytes, leukocytes, as well as cell groupings. Excellent photomicrographs of benign and malignant smears and sections are included to illustrate and compare the significant cell types.

VAGINAL CYTOLOGIC SCREENING IN PRIVATE PRACTICE

WILLIAM BLACK, ROBERT RUCH, SIDNEY JONES, WALTER RUCH and CYRUS ERICKSON - Obstetrics and Gynecology 2: 261-266, 1958

The purpose of this study was to evaluate the efficiency and accuracy of a cancer screening project applied first on a "fixed-fee" basis where the individual patient paid for each smear and secondly as part of a mass population screening project (Institute of Pathology, University of Tennessee) where each smear was taken free of charge. Approximately the same number of women were examined in each series. The first series covered a six year period; the second, a 4-1/2 year period.

Specimens were aspirated from the vaginal pool. The clinician did not receive a report of cytological findings, but rather advice as to follow-up therapy. Cold knife conization was the preferred technique where biopsy was requested, except in cases of invasive carcinoma and in the pregnant patient.

Biopsies were requested in 2.9% of the gynecological patients and in 0.4% of the obstetrical patients. From this group, 69% had cervical cancer; the remainder showed an infection of some sort.

Requests for repeat smears, cervical scrapings and aspirations increased with age, suggesting a possible hormonal factor. Requests for biopsies occurred with peaks corresponding to the highest incidence of carcinoma in situ and of invasive cancer.

Not only were at least 12 of the 33 carcinomas in situ unsuspected by the history and physical examination, but two of the invasive lesions were also unsuspected. One false negative occurred. Of 13 requested for curettage as well as cervical biopsies, 5 proved to have endometrial adenocarcinomas and 6, cervical malignancies.

The authors found that the incidence of carcinoma in situ was as high in the menopausal women over 50 as in women aged 30-39.

Under the "fixed-fee" basis, a diagnosis of carcinoma in situ was made on 5 patients and in the mass screening project 33 cancers were diagnosed. As a result of this study, the authors hope that when a "fixed-fee" basis of taking smears returns, the public will be educated enough to realize the significance of such an examination.

ESTIMATION OF THE DEGREE OF MALIGNANCY OF DYSPLASTIC LESIONS OF THE UTERINE CERVIX

JEAN DE BRUX and L. N. PLYCESE - *Revue Francaise de Gynecologie et d'Obstetrique*
1: 63-71, 1958

(This study was performed in the laboratory of Colpo-cytology of the Gynecological Department of l'Hopital Broc, Paris, Professor Funck-Brentano.)

It is difficult to distinguish between "atypical dysplastic" lesions (i.e., suspicious lesions) and carcinoma in situ. In order to make microscopic diagnosis easier, the authors describe a method based on the maturity of the cell.

They create the term "Immaturity Index," which can be estimated in biopsy specimens as well as in vaginal smears.

They claim that when a suspicious lesion is biopsied and is found to have an "Immaturity Index" of 25-30%, this may be considered as a criterion of malignancy. When only a vaginal smear is made, the lesion is not considered malignant unless the "Immaturity Index" is at least 40%. (Author's summary.)

EXFOLIATIVE CYTOLOGY OF URINARY SEDIMENTS

N. CHANDLER FOOT, GEORGE N. PAPANICOLAOU, NELSON D. HOLMQUIST and JOHN H. SEYBOLT - *Cancer* 2: 127-137, 1958

The efficiency of the technique in detecting carcinomas of the genito-urinary tract was studied in 2,829 cases which were grouped according to final clinical diagnosis under (1) bladder, ureters and renal pelvis, (2) kidneys, and (3) prostate. Of the 3 groups, the best accuracy of cytological reports was achieved for tumors of those structures that are lined with transitional epithelium (bladder, ureters and renal pelvis). In 212 cases from Group 1, 61.7% were correctly interpreted as positive upon examination of smears.

A relatively low degree of accuracy, 8.3%, was attained in the group of renal malignancies.

Fifteen percent of patients harboring cancer of the prostate were correctly reported cytologically positive on urine specimens. Although only a few specimens of fluid obtained by prostatic massage were submitted, it would appear from the results obtained by other investigators that this would be a more appropriate type of specimen for study.

False positive reports were given in 1.2%, 1.0%, and 1.0% of each of the 3 groups of cases, respectively. Correct negative reports were issued on 90.8%, 92.5% and 89.3%, respectively.

Conditions most often confused with malignancy were renal calculus and chronic cystitis.

The value of repeat specimens cannot be disputed, but in 60% of the over-all cases, correct cytological interpretations were rendered on the first specimen.

SUGGESTED EXPLANATION FOR ACCURACY OF THE PAPANICOLAOU METHOD FOR CYTOLOGIC DIAGNOSIS. A HISTOCHEMICAL STUDY.

ANTON LINDNER - *American Journal of Clinical Pathology* 29: 43-48, 1958

The subject of morphologic criteria for identifying cancer cells is of special interest since no absolute criteria have been established for distinguishing normal from malignant cells. The pathologist, in diagnosing cancer, is aided by the pattern and arrangement of cellular growth, while the cytologist makes his diagnosis only from single cells; both, however, with a high degree of accuracy.

This study investigates histochemically the physiology of the cancer cells and notes the visual changes in these cells which make diagnosis by means of the Papanicolaou smear easy and highly accurate.

Cervical specimens previously diagnosed as carcinoma in situ were: (1) stained by Feulgen technic to quantitate the DNA content (sections of mouse liver as control group), and (2) stained by naphthol yellow-S (Deitch method) to demonstrate the protein groups. Quantitation was by photographic photometry.

Quantitative histochemical examination of cervical carcinoma in situ for DNA revealed 85.8% polyploidy. This increase in nucleic acid provided an explanation for the anaplasia and irregular configuration of the nuclei of cancer cells. Upon exfoliation, the diameters of the nuclei of the cells increase; the relative amounts of DNA remain approximately the same inasmuch as the concentration of DNA per cell is reduced.

The protein groups in the cell increase and further enlarge the degenerating cancer cells, producing even more pronounced anaplasia and irregularities of the nuclei.

The author thinks that the biochemical changes associated with beginning death of such cells bring about the distinct morphologic changes that are characteristic of cancer cells. He observed further increase in the size of the nuclei in anaplasia, associated with vacuolization of the cells and chromatin that is irregularly distributed in coarse clumps and strands, but rarely with mitosis.

A SURVEY OF CURRENT STATUS OF THE SMEAR CYTOLOGY IN THE FIELD OF GYNECOLOGY AND OBSTETRICS

MIZUNO, J. - Sanka to Fujinka (Obstetrics and Gynecology) 25:4-11, 1958

Prior to taking up this subject, a brief review was given of the programs of the International Cancer Cytology Congress in 1956 and of the 5th Annual Meeting of the Inter-Society Cytology Council in 1957, in order to afford an understanding of the current tendency in smear cytology.

In the author's opinion, the cytologic smear technique and its practical application in gynecology and obstetrics are divided into the following three divisions: 1) the detection and cytologic study of malignant tumors of the female genital tract, particularly uterine cancer, 2) examination and study of endocrinological activity of internal secretions, particularly the sex hormones and 3) miscellaneous study; for example, prediction of fetal sex, determination of ruptured fetal membranes, etc. In each of these divisions, the current status of the cytological smear was surveyed referring to the domestic and foreign publications in the last few years. (Author's abstract.)

EXFOLIATIVE CYTOLOGIC PATTERNS IN CARCINOMA IN SITU CORRELATED WITH HISTOPATHOLOGIC FINDINGS

GEORGE N. PAPANICOLAOU - Proceedings of the Third National Cancer Conference, 652-658, 1957

In this article the four types of dyskaryotic epithelial cells--superficial, intermediate, parabasal and endocervical--and their distribution in 50 cases of early carcinoma of the cervix (37 in situ and 13 with indication of early invasion) are depicted and discussed. The histological pattern corresponding to each of the four dyskaryotic patterns is shown.

EXFOLIATIVE CYTOLOGY OF THE HUMAN MAMMARY GLAND AND ITS VALUE IN THE DIAGNOSIS OF CANCER AND OTHER DISEASES OF THE BREAST

GEORGE N. PAPANICOLAOU, DORIS G. HOLMQUIST, GENEVIEVE BADER and EMIL A. FALK - Cancer 2: 377-409, 1958

Breast secretion smears were obtained from 1,066 of 2,010 patients examined for nipple discharge. Cyst aspirate smears were obtained from 100 patients.

Of the total of 2,010 patients, 917 were without symptoms of breast disease. By means of palpation or use of a hand breast pump, secretion was obtained either unilaterally or bilaterally from 171 (18.5%) of the 917 and bilaterally from only 74 (8.1%).

In a higher percentage of premenopausal than postmenopausal women was the secretion positive. The group in which the highest percentage (55%) of women was secretion positive was that composed of women aged 20 to 39 years who were examined in the fourth week of a regular menstrual cycle.

Secretion smears from clinically normal breasts tend to be sparsely cellular. The cell types that may be present in these smears are duct epithelial cells, foam cells, macrophages, and, occasionally, leukocytes and superficial squamous cells.

The cytological patterns in breast secretion smears in cases of inflammation and infections, chronic cystic mastitis, intraductal papillomas and primary mammary carcinomas are discussed.

The cell structures and patterns of benign and malignant cysts as studied in cyst aspirate smears are described.

Malignant cells can be distinguished from non-malignant cells in breast secretion and cyst aspirate smears chiefly on the basis of nuclear abnormalities and other cytological criteria of cancer.

Examination of secretion smears from 613 breasts of 438 women without symptoms of breast disease revealed one unsuspected mammary carcinoma in situ.

There were 45 proven mammary carcinomas in a group of 510 patients with symptoms of breast disease. Breast secretion smears were read as suspicious or positive for cancer in 27 (60%) of the 45.

Smears from 5 (71.4%) of 7 women with primary intracystic carcinoma of the mammary gland were reported as positive for cancer. Classification was deferred on cyst aspirate smears in a case of cystosarcoma phyllodes occurring in this series.

Secretion smears from one breast in women under treatment for carcinoma of the other breast or who had had unilateral mastectomy for carcinoma were read as suspicious or positive in only 2 of 8 women in whom carcinoma, presumably metastatic, was found in the breast from which smears were obtained.

Four cases of early, preclinical mammary carcinoma detected by smear examination are added to those reported from other laboratories.

Since cells desquamating from a mammary carcinoma can be identified as such when present in the secretion smears, and since a high accuracy can be maintained in the Class IV and Class V cytology reports, it is felt that spontaneous nipple discharge should always be examined microscopically.

It is further suggested that examination of the breasts for the presence of secretion in patients without symptoms of mammary disease can be incorporated into the physical examination with little loss of time and without danger to the patient. The microscopic examination of any secretion obtained may lead to the detection of early or unsuspected mammary carcinoma.

In regard to the diagnostic value of breast secretion and cyst aspirate smears, it may be stated that, although the negative reports cannot be relied upon to rule out the presence of mammary carcinoma, the positive reports are as reliable in this as in any other application of the smears method. (From authors' conclusion and summary.)

"SHAVE" BIOPSY OF THE CERVIX

SAMUEL S. ROSENFELD, ALFRED SCHWARZ and SIDNEY STECKEL - American Journal of Obstetrics and Gynecology 75: 904-908, 1958

The authors wished to solve the problem of obtaining cervical biopsies without hospitalization for the patient; however, not as a competitor of the Papanicolaou technique, but as an adjunct to it. 251 biopsies were performed by shaving of the cervix and the microscopic diagnoses of experienced pathologists were reported. Invasive carcinoma was found in six cases. There were no cases of hemorrhage and no patient required hospitalization as a result of the procedure. Follow-up disclosed no instances of stenosis of the cervical canal. In a few patients the erosions were appreciably improved.

The authors feel that this method is an improvement over the punch biopsy because of the failure of the latter always to obtain the specimen from the area involved. The "shave" biopsy takes the material from the entire squamous columnar junction and from the lower portion of the endocervix. The cytological and biopsy findings were in agreement except in three cases where suspicious cells were found cytologically but not on biopsy. This method was also used on 10 pregnant patients with no complications.

CARCINOMA COLLI UTERI INCIPIENS

EDMUND SCHUELLER - Arch. Gynakol. (Accepted for publication January 1, 1958)

The histomorphological features of the early invasive cervical carcinoma is described on the basis of 9 typical examples. On 4 of these microscopically small carcinomas, it was found that the further fatality and formation of metastases verified the histological diagnosis. The other 5 cases can be considered "per analogiam" as true early carcinomas.

The presence or absence of a true cervical carcinoma can be stated only if, in every individual case, the cervix is conized in such a way that one obtains material containing the os externum uteri and the lower part of the endocervix. This specimen must then be examined completely in serial sections.

The early true cervical carcinoma must always be treated radically, even if it invades only a few millimeters into the cervical tissue. The carcinoma in situ, however, is adequately treated if it is excised in its entirety in the healthy tissue. An endocervical curettage should be done at the same time the conization is performed in order to exclude the presence of an endocervical carcinoma, the site of which is located above the limit of the conization. (23 photomicrographs) (author's abstract.)

CANCER CELL CONTAMINATION OF OPERATIVE WOUNDS

ROBERT R. SMITH, LOUIS B. THOMAS and ALBERT W. HILBERG - Cancer 2: 53-62, 1958

A total of 120 operative procedures were performed in a group of 101 patients who had primary operable cancer with no evidence (clinical or laboratory) of metastases beyond the operative site. These patients were treated by accepted radical operative procedures.

Washings for cytological examinations were collected previous to closure of the skin flaps after surgical procedure removed the cancer and the areas adjacent to it. The wound created by the surgical procedure was thoroughly washed with sterile physiological saline. The results of the cytological examination were reported as positive, suspicious or negative.

Cytological study of wound washings from the 120 operative procedures revealed positive evidence of malignant cells in the washings of 31 (25.9%) of the series. An additional 17 (14.1%) of the washings were reported suspicious.

In 10 of the wounds from which positive washings were obtained, recurrent cancer developed, and in 16 of those having negative washings. Based on patient months of exposure, the local recurrence rate for the positive washings group was 40%, that for the suspicious group, 36%, and for the negative group, 26%. At present stage of this study, these values are not believed to be statistically significant.

A review of clinical and pathological data of the 120 wounds failed to reveal a statistically significant correlation between wound washings and such factors as type of surgery performed, patient weight loss, size of primary tumor, lymph node metastases or degree of histological differentiation of the cancer. There was a positive correlation between the finding of cancer cells in wound washings and vessel invasion as demonstrated in histological study of surgically excised specimens, also between wound washing findings and surface ulceration of the primary tumor. The association of local recurrent tumor with disseminated cancer was observed more frequently in patients from whom positive washings were obtained. Based upon patient months of exposure, the percentage of patients in this series that died of their cancer was found to be 53% for positive washing group, 26% for the suspicious washing group and 29% for the negative washing group.

CYTOLOGICAL SCREENING FOR CERVICAL CANCER (COMPARATIVE FINDINGS IN A 6 YEAR SURVEY OF A WELL POPULATION)

ELIZABETH STERN - Cancer 2: 122-126, 1958

The cytological examinations were carried out over a 6 year period, 1950-1955, within the framework of a complete cancer detection work-up on a well population that was stable with regard to age distribution, racial, religious, marital and economic backgrounds and was similar to the regional population in these respects.

In the first 5 years, only a small percentage of women were selected for smear study, mainly on the basis of visible cervical lesions. All women had smears during the last year of this study.

Vaginal pool and direct cervical smears were done initially. In the pre-menopausal group, smears were taken at mid-cycle. Repeat smears were done on all women with atypia and on post-menopausal women with abnormal bleeding and negative initial smear findings.

Preliminary verification of positive Pap smears is done either in clinic when biopsy is feasible, or by the outside physician to whom she is channeled by local medical associations.

The vaginal smear examination of 39,387 women in the 6 year period yielded 303 cases of proved genital cancer:

- 241 Squamous cancer
- 3 Adenocarcinoma of cervix
- 38 Fundal adenocarcinomas
- 2 Cancers of the vagina
- 18 Recurrent cancers.

There was an increased discovery rate of cancer of the cervix when a greater number of individuals were studied, increment largely in the *in situ* group. The number of *in situ* cases increased from 0.9 to 3.0 per 1000 women attending the clinic.

Stage 0 cases showed a peak incidence between ages 30-39, but were found at all ages from 20-70 years. When all patients were studied, there was an increase in the number of preinvasive cancer cases discovered at all age levels.

DETECTION AND LOCALIZATION OF PRECLINICAL CARCINOMA OF THE CERVIX BY CONTACT SMEARS

HARRY M. TRIFON - Surgery, Gynecology and Obstetrics 106:495-501, 1958

In an attempt to localize the preclinical carcinomas of the cervix, the author has devised a method for making a contact smear of the cervix, in addition to an endocervical smear. A clear description with illustrations of the technique is given. The author feels that when properly prepared the cervical contact smear provides an accurate transfer of the cervical epithelium, especially in the area of the squamo-columnar junction. Experience with the contact smear has indicated that it may be possible to pinpoint the microscopic focus of preclinical cancer. Although adenocarcinoma has not yet been encountered, it is believed that if the malignant cells were present in the endocervix, one should expect to detect them in the central portion of the contact smear. The advantages and disadvantages of the technique are listed.

A SIMPLE CYTOLOGICAL TEST FOR CANCER CURE

ERICA WACHTEL - British Medical Journal 1: 20-22, 1958

It has been found that postmenopausal women suffering from cancer of the genital tract irrespective of the type and site of origin of the growth, very often have high Karyopyknotic Indices (over 10). It is assumed that estrogen is responsible for the high Karyopyknotic Index and the hypothesis is made that the malignant growth itself is capable of estrogen production. This hypothesis is applied as a prognostic test

in the follow-up examination of treated gynecological cancer patients. It is reasoned that if the presence of tumor tissue is responsible for the raised karyopyknotic index, removal or destruction of all viable tumor cells will cause the high Karyopyknotic Index to revert to low values, whereas incomplete treatment will not materially affect this index. It is pointed out that, although a high Karyopyknotic Index before treatment is only of significance in postmenopausal patients, a high reading after treatment is regarded as a bad prognostic sign in any patient since radical treatment removes the ovaries or destroys their function. Applying this theory to follow-up investigation of 165 gynecological cancer patients, the following results were obtained: 111 showed no evidence of clinical, histological or cytological recurrence and had K.I. readings under 10; 37 had K.I. reading over 10, and other evidence of remaining or recurrent disease was discovered later; 9 patients had K.I. readings above 10 without other evidence of treatment failure, but the observation period in these patients is regarded to be too short to be conclusive of error in cytological prognosis. In 8 patients there was clinical and histological evidence of recurrence without rise in Karyopyknotic Index. The possible reasons for this prognostic error and the limitations of the test are discussed. (Author's abstract.)

EARLY DETECTION OF CERVICAL CARCINOMA

WOLFGANG WALZ - Geburtshilfe und Frauenheilkunde 18: 243-256, 1958

The measures are described which were adopted for the early diagnosis of cancer of the cervix at a medium-sized-County Hospital. Because of the impossibility to carry out cytological and colposcopic studies on a large scale, the patients attending the gynecological out-patient clinic were "selectively screened," i. e. only those with symptoms and signs (macroscopic lesions, discharge, irregular bleeding) had cytological, colposcopic and colpomicroscopic examinations. All in-patients, however, were so examined. 3204 cases came under observation during the past 5 years. The majority had cytology and colposcopy, and about 50% had colpomicroscopy in addition. The latter technique was employed in all cases with erosions, ectopia with zones of transition, healed lesions, and in all cases reported suspicious by the first two methods. By the use of colpomicroscopy the number of biopsies could be considerably reduced without loss of diagnostic accuracy. An analysis of the results showed that the ratio: carcinoma in situ/invasive carcinoma (25%), and the "pick-up rate" did not differ materially from the figures reported by other investigators. The annual cancer morbidity (average of 5 years) was 0.038%. "Selective screening" combined with appropriate diagnostic methods is, therefore, as effective in detecting carcinoma in situ as expensive and time-consuming mass investigations.

By using a combination of diagnostic techniques it was also possible to assess the merits and limitations of the individual methods. In a number of cases lesions appeared benign under the colposcope when, in fact, intraepithelial carcinoma or pathological epithelial changes were present. The most reliable results were obtained with colpomicroscopy. This technique should, however, be used in conjunction with cytology and colposcopy as it is unsuitable for the diagnosis of intracervical carcinoma. The absence of malignant changes can be reliably established by colposcopy + cytology alone, while suspicious lesions should have colpomicroscopy as well.

Since its introduction, five years ago, this combined diagnostic technique has succeeded in bringing to light a steadily increasing number of intraepithelial carcinomas and Stage I carcinomas of the cervix (from 23.5% to 52.3%) while the number of cases of advanced carcinoma has decreased correspondingly. (Author's summary.)

CRITICAL EVALUATION OF EARLY CANCER DETECTION (KRITISCHE BETRACHTUNGEN ZUER KARZINOMFRUHDIAGNOSTIK)

HANS KLAUS ZINSER and G. KERN - Geburtschilfe und Frauenheilkunde (Accepted for publication, February, 1958)

Based on 137 histologically verified cases of early cancer (mostly carcinoma-in-situ), the relative merits of colposcopy and cytology as a means of early diagnosis of cancer of the genital tract are discussed. The fact that the cytodiagnosis had been correct in all 137 patients whereas colposcopy had made an accurate diagnosis in only 67%, and had missed 33%, of the cases provides clear evidence that the smear technique has a higher degree of accuracy in the diagnosis of early cancer of the uterus. The sources of error inherent in the colposcopic and cytological technique (intracervical location of the lesion, absence of exfoliation, degree of differentiation) are discussed. The following conclusions are arrived at: 1) cytology is today the most accurate and reliable method of discovering early cancer of the genital tract; 2) the use of the smear technique for mass investigation is attended by great difficulties; a combination of the two methods is, therefore, advocated for the detection of early cancer of the uterus. (Author's abstract.)

HORMONAL CYTOLOGY

VAGINAL SMEAR IN MENOPAUSE

HIRA E. DOCTOR and HANNAH PETERS - Indian Journal of Medical Research (Accepted for publication March 5, 1958)

Smears taken on 178 women during menopause were cytologically analysed. The cell picture varies greatly; a smear characteristic for menopause does not exist. Forty-nine per cent of all smears examined show a moderate or marked persistence of estrogen effect after the cessation of menstruation. The

number of smears indicating estrogen stimulation decreases with an advancing menopause but even 21 years or more after the last menses, 1/4 of the smears still show evidence of estrogen activity. The findings are discussed and compared with the evidence of continued estrogen activity during menopause reported from other countries. (Author's abstract.)

THE VALUE OF THE VAGINAL SMEAR IN THE TREATMENT OF DISORDERS OF MENSTRUATION

MARY E. EGERTON - Journal of Obstetrics and Gynecology of the British Empire
64: 827-835, 1957

Vaginal and cervical smears were taken from 1970 patients attending the gynecological clinics of the Royal Free Hospital, London, between 1953-1956. In an effort to assess the value of the test as a routine measure in gynecological practice, both smears were screened for cancer and the vaginal smear was examined for evidence relating to ovarian function. The normal range of variations in vaginal smears as described in the literature is summarized and the technic used in the collection and interpretation of the present series is described. In the course of this study it was found that many patients with menstrual disorders gave smears which differed markedly from the accepted norm--and that treatment with estrogen or progesterone as indicated by the smear did, in many cases, not only bring about an approximation of the accepted cytological patterns, but also resulted in amelioration of symptoms. It is suggested, however, that caution should be exercised when interpreting isolated smears, as is sometimes done following operations for breast cancer because a high cornification percentage is not necessarily an indication of high estrogen levels. This fact should not discourage a wider use of the test, which merits extended application, increasing study and serious efforts to correlate it with biochemical and other investigation. The work described above has led to the continued use of vaginal cytology in the gynecological department of this hospital. (Author's summary.)

UTILITY OF VAGINAL SMEARS IN PREGNANCY

H. ERMENT and H. RUF - Revue Francaise de Gynecologie et d'Obstetrique 1: 49-62, 1958

(This study was carried out in the Obstetric and Gynecological Clinic of the Faculty of Medicine at Marseille, France.)

Vaginal smears are easy to prepare and may be interpreted rapidly. They reflect the vaginal response to hormonal stimuli during pregnancy. The method is of incontestable utility in the diagnosis of fetal death.

In cases of abortion or premature labor due to hormonal imbalance, the cytologic picture should be cautiously interpreted, and a diagnosis should never be made without considering the quantity of hormones secreted.

In spite of this limitation the method is useful, and we believe that its main indication is in the rapid control of the effects of treatment.

A study of cytology at the end of pregnancy could perhaps be useful in differentiating cases of post-maturity in which the fetus runs no risk from frankly pathological cases of post-maturity. (Author's summary.)

LUTEAL ACTIVITY AND VAGINAL SMEARS

L. DE GENNES, H. BUICAIRE and F. MOUSSALANI - La Presse Medicale 66: 559-562, 1958

The authors give a brief summary of observations in the previous literature on this subject. In view of conflicting opinions cited as to whether vaginal smears can give a true reflection of luteal activity, they compared smears from 25 women in whom, according to fixed criteria, luteal activity was already known to be either present or absent. Their criteria for definite or highly probable progesterational activity evolved from 29 smears taken under the following conditions:

- (a) after administration of progesterational agents,
- (b) during the second half of the cycle, in cases showing a rise of basal body temperature,
- (c) in early pregnancy,
- (d) during the luteal phase of multiparous women having regular menstrual cycles, and who showed a Karyopyknotic Index of at least 45% in the middle of the cycle.

Their criteria of absence of luteal activity were based on 46 smears taken

- (a) during the first half of the cycle, and
- (b) after the administration of estrogens.

Smears were taken with a spatula from the posterior or lateral fornices, and stained, usually, with the Harris-Shorr technique.

The two groups were then compared, not for their general appearance, but on a quantitative basis with reference to 1) eosinophilia and pyknosis (Karyopyknotic Index), 2) folding of eosinophilic cells (expressed as a percentage) and 3) exfoliation in sheets (expressed on a "+" and "-" basis).

Results

1) Of the luteal smears, a significant number (66%) showed a folded-cell index higher than 65%, while of the non-luteal smears the corresponding incidence was only 13%. The value of observing folding of the eosinophilic cells, however, was thought to have a greater negative significance, a folding index of less than 50% indicating absence of luteal activity. Exfoliation of cells in sheets showed a less striking difference between the luteal and non-luteal smears, the percentage of incidence being 63% and 45%, respectively. It was considered, however, that the absence of sheet exfoliation in a smear with a Folded-cell Index of less than 50% indicated that luteal activity was extremely unlikely.

2) In 12 cycles, the follicular and luteal phases were compared: 3 showed no differences, and as they had a mid-cycle Karyopyknotic Index of less than 40%, were considered to be anovulatory cycles. The 9 cases showing differences in the 2 halves of the cycle were described in detail, the findings leading to the conclusion that where there was an obvious and persistent increase in eosinophilic cell folding and in the exfoliation of sheets of cells, luteal activity was highly probable.

3) Studies of the Karyopyknotic Index showed that where this rose to 45% in mid-cycle and then fell, the occurrence of ovulation was highly probable; whereas if it failed to rise, ovulation probably did not occur. If it rose and remained above 40%, the estrogen-progesterone ratio was disturbed.

In summary, the authors stressed that although progestational changes were reflected in the vaginal epithelium, there was no one specific change. The most definite findings were negative; i. e., an eosinophilic cell Folded-cell Index of less than 40% was a good sign of absence of ovulation. No opinion could be given on smears showing infections or parasitism.

DIAGNOSIS AND PROGNOSIS OF ABORTION BY "COLPOCYTOLOGY"

LUIS MONTALVO RUIZ-Acta Ginecologica(Accepted for publication, March 20, 1958)

We have collected smears from 120 women who threatened abortion from the first to the fourth month of pregnancy. Only in 58 of these cases could we follow the pregnancy and know the final results. It is these 58 cases of abortion which make up our study.

We made our diagnosis and prognosis according to the eosinophilic index. When the Eosinophilic Index is over 25% in the first three months, we are suspicious of an abortion. However, when it exceeds the 40% mark, we feel the abortion may take place immediately. Incomplete abortions are confirmed in the smear by the presence of "parabasal cells" of the post-partum type.

In our study, the abortion was clinically diagnosed in 34 cases; in 28 cases, the colpocytological diagnosis agreed with the Eosinophilic Index below 25%. In one case, the Eosinophilic Index was 35%, and after treatment it went down to 10%, and the pregnancy came to an end.

We believe that the colpocytological examination is the best and easiest method to make the prognosis of an abortion, much better than the Gailli-Mainini. In this work, we have three positive Gailli-Mainini cases whose cytology had an Eosinophilic Index over 40% and the patients aborted. (Author's abstract.)

COMPARATIVE CYTOLOGICAL STUDIES ON THE VAGINAL AND CERVICAL EPITHELIUM IN RELATION TO HORMONE SENSITIVITY

HANNAH PETERS - Zentralblatt fuer Gynakologie (Accepted for publication January 24, 1958)

Cytological investigations were made during lactation amenorrhea. They indicate that the epithelium of the vagina and of the cervix react with a different sensitivity to hormone stimulation. The comparison of vaginal and cervical smears showed that the vaginal epithelium reacts more sensitively to stimulation than the cervical epithelium. It is suggested that by studying the vaginal and cervical smears on the same patient, quantitative information about the effective hormone available can be obtained. (Author's abstract.)

THE NEED FOR EXPLICIT TERMS TO DESCRIBE THE CYTOLOGICAL FINDINGS IN GYNECOLOGY

J. PAUL PUNDEL - La Semaine des Hopitaux 34: 200-204, 1958

This is an abstract of the introductory lesson done by the author at the symposium of hormonal and cancerous cytology organized at the University of Paris by Professors Delarue and Sicard in 1957. Reference is made to a certain number of terms used in the hormonal diagnosis by vaginal smears to determine the level of estrogen function, such as vaginal cornification, superficial cells, the acidophilic reaction of the vaginal epithelium, the nuclear pyknosis, mucus and cytolysis. When these terms are used by different authors the meaning expressed is not always the same. Also, certain terms, such as cornification and acidophilic reaction, have no scientific basis. In order to facilitate cytological research and to enable the findings of different workers to be compared, the author proposes definitions of these commonly used terms based on stricter standards or on physiological activity. Emphasis is placed on the need for establishment of an International Committee for the Standardization of Terms used in Cytology. (Author's abstract.)

CYTOLOGY IN INFLAMMATORY REACTIONS

IMPORTANCE OF SOME CLINICALLY ATYPICAL FORMS OF TRICHOMONAS INFESTATIONS

M. GAUDEFROY - Infestations à Trichomonas, Masson et Co. Paris, 1957

In spite of accumulated knowledge of the way in which Trichomonas vaginitis presents itself, the affliction is still not fully understood. Our contribution to the study of the disease is to describe typical form: a pseudo-cancerous form; a pseudo-salpingitic form; a conjugal and venereal form; and a pseudo-surgical form. In smears from these atypical forms of Trichomonas vaginitis, when stained by a differential method, one sees a perinuclear halo, and the Eosinophilic Index is greater than the Karyopyknotic Index. One can usually be successful in finding the parasite in wet smears; the examination should be repeated after advising the patient to abstain from sexual intercourse and vaginal douches for a while, and follow-up examination commenced a few days after menstruation.

To effect a cure, specific local treatment of the Trichomonas is required together with oral therapy, and, eventually, treatment of the husband. The successful result of such therapy proves the part played by the Trichomonad parasite in these neglected atypical forms of vaginitis and points to their true etiology. (Author's abstract.)

THE DIAGNOSTIC ERRORS IN THE HORMONAL EVALUATION AND CANCER SCREENING BY VAGINAL SMEARS IN CASES OF TRICHOMONAS INFESTATION

J. PAUL PUNDEL - Gynecologie Pratique 8: 491-497, 1957

Genital infestations with Trichomonas vaginalis may give rise in the woman to important modifications of the vaginal and cervical cytology. They may simulate, because of the pseudo-eosinophilia they produce, an excessive estrogenic stimulation, or, because of the dislocation of luteal cell clusters, an absence of progesteronic activity. In the cervical epithelium, they may promote suspicious nuclear abnormalities in the smears as well as in the biopsies. Cytologists must abstain from making a hormonal diagnosis if there are evident signs of trichomonas infestation in the smears. A diagnosis of in situ cervical carcinoma should not be accepted in the presence of trichomoniasis, except when the cytological and histological abnormalities persist after a correct and effective treatment of such an infestation. (Author's abstract.)

CYTOLOGICAL TECHNIQUES

SUPRAVITAL STAINING OF SEDIMENTS OF SEROUS EFFUSIONS. A SIMPLE TECHNIQUE FOR RAPID CYTOLOGICAL DIAGNOSIS.

N. CHANDLER FOOT and NELSON D. HOLMQUIST - Cancer 2: 151-157, 1958

A very simple method is described which helps to distinguish histiocytes and mesothelial cells from malignant cells in sediments of serous effusions of both mice and humans. Histiocytes and mesothelial cells may undergo misleading metaplastic changes under certain circumstances and are then readily mistaken for cancerous elements. The dried film neutral red-Janus green method for staining cells supravitaly is demonstrably applicable. It distinguishes between histiocytes and leukocytes on the one hand and neoplastic cells on the other. Mesothelial cells do not stain selectively by this method, but are, nevertheless, easily identifiable.

This method may be employed as a means for providing temporary tissue cultures that will remain viable and usable for at least 48 hours.

The authors admit that the series of cases upon which the most important conclusions are based--the human cases--falls far short of statistical validity. However, since their results were confirmed by conventional Pap smear and cell block studies, they felt that it would be permissible to publish their observations before procuring 100 cases.

This method has not yet been applied to other sediments, but the authors hope it will prove of value in the examination of sediments of other fluids.

A CYTOLOGIC CLEARING TECHNIC FOR ENDOMETRIAL DIAGNOSIS

B. CORNELIUM HAPMAN and S. C. WERCH - Obstetrics and Gynecology 2: 267-272, 1958

The authors, concerned with the number of endometrial carcinomas missed cytologically, felt that an initial clearing technic was essential in order to be able to examine the endometrial cells without the complication of an indistinct background.

Turk's solution was employed as the background for the technic. The dilute acetic acid portion of the solution hemolyses the red blood corpuscles, thus making the leukocytes, stained with gentian violet,

available for counting. Five to thirty minutes were the times used to bathe the smears in glacial acetic acid and acetic acid dilutions down to 1%. Higher concentrations of acetic acid were found to be better for clearing purposes. Fifteen minutes was the best exposure time. Not only were the red blood corpuscles cleared away, but also any mucin that was present in the smear.

Specimens were obtained by the aspiration technic of Papanicolaou and Hecht. A uterine cannula was introduced after adequate dilation of the cervix and examination of the uterine cavity with a probe. Smears were made directly from the end of the cannula. When cervical scraping alone is performed, 50% of the carcinomas of the endometrium are missed.

Chromatin distribution was used as the main criterium for a diagnosis of cancer in the smear. The size and shape of the cells did not contribute to the diagnosis, but the more distinct development of nucleoli in the cancer cells was helpful. (Author's abstract.)

OTHER PHASES OF CYTOLOGY

THE SEX CHROMATIN (Editorial)

CLARICE DO AMARAL FERREIRA - Anais Brasileiros de Ginecologia (Accepted for publication March, 1958)

The author compiles a review on sex chromatin, synthesizing several works on the subject from BARR, MOORE and GRAHAM to the present. The author explains the significance of the sex chromatin and the various methods of studying it: from tissue specimens and blood. She also refers to its utilization in the diagnosis of the sex of an unborn child from the amniotic fluid cells. Some references to the study on sex chromatin in tumor cells are made. (Author's abstract.)

THE IMPORTANCE OF THE KARYOMORPHOLOGIC SEX DETERMINATION IN GYNECOLOGY (ZUR BEDEUTUNG DER ZELLKERNMORPHOLOGISCHEN GESCHLECHTSBESTIMMUNG FÜR DIE GYNÄKOLOGIE.)

A. BOHLE and P. STOLL - Wiener Med. Wochenschrift 20: 423, 1957

The technique of Barr and Bertram (1949) concerning the karyomorphologic sex determination permits the study of the following problems:

- (1) the relation of the sexes in fetal death in the first months of the pregnancy,
 - (2) the relation of the sexes in extra-uterine pregnancy, and
 - (3) the relation of the sexes in moles and chorionepitheliomas.
- (Author's abstract.)

MORPHOLOGICAL AND STATISTICAL EXAMINATION OF THE SEQUENCE OF INTRAUTERINE FETAL DEATHS IN THE FIRST HALF OF THE PREGNANCY. (MORPHOLOGISCHE UND STATISTISCHE UNTERSUCHUNGEN ÜBER DIE INTRAUTERINE ABSTERBEORDNUNG IN DER ERSTEN HÄLFTE DER SCHWANGERSCHAFT.)

A. BOHLE, P. STOLL and H. VOSGERAU - Klinische Wochenschrift 35: 358, 1957

The sex of 645 fetuses and embryos which were aborted in the first to sixth fetal months is determined by means of the technique developed by Barr, on the so-called sex chromatin of the connective tissue cells and endothelial cells of the placental villi. The following results were obtained:

The relation of the sexes is increased from the sixth to the fourth fetal month, and is critically decreased from then on to the first fetal month. The height of the male deaths is apparently not during the first, but during the third to fourth fetal months.

According to the findings of Pfaundler, the primary relation is 122 rather than 146.2. According to the findings of this study, it is thought possible that the primary relationship of the sexes is even closer to 100 than to 122, as previously reported by Pfaundler. The possible reasons for the maximal male deaths in the third or fourth fetal months are discussed and elaborated. (Author's abstract.)

GLANDULAR ENDOMETRIAL STROMA CELLS

H. HAMPERL and G. HELLWEG - Obstetrics and Gynecology 2: 379-387, 1958

In the endometrium during the secretory phase and in the decidua up until three months' gestation, cells appear which contain non-metachromatic granules. These are called "granular endometrial stroma cells" (Kornchenzellen or K cells). Their granules contain a high molecular protein rich in tyrosine and tryptophane. The cells develop from undifferentiated stromal cells, degenerate with retrogression of the decidual cells, and appear outside the uterus only in ectopic decidua. The K cells can be distinguished readily and with assurance from the metachromatic cells which also occur in the decidua.

Netter and co-workers have found such cells in vaginal smears and smears from the endometrium during menstruation, where they are called "menocytes." Since Netter et al have expressly emphasized, however, that the granules of these cells are metachromatic and contain polysaccharides, it seems that they have actually seen the metachromatic, granulated decidual cells. Proof of K cells in the smear is still lacking.

Their occurrence in diseased endometria, in animals, and their artificial production by hormone therapy in castrated women is discussed.

"SPIDER CELLS," A NEW INHABITANT OF PERITONEAL FLUID.
A PRELIMINARY REPORT.

HERBERT W. HORNE, JR. and CLAIRE AUDET - Obstetrics and Gynecology
2: 421-423, 1958

It has been suggested that the examination of fresh peritoneal fluid at the time of laparotomy might be helpful in infertility problems where the cause of infertility is indefinite. A total of 10 patients was used for this study. Each had successfully undergone all the usual tests of an infertility work-up. No cause other than endometriosis and/or peritoneal adhesions was thought to be the reason for infertility. Each patient had a conservative laparotomy. The method of finding actively progressive sperm in this fluid has been described. A previously overlooked cellular inhabitant of peritoneal fluid, the "spider cell," has been reported, the significance of which is not known.

THIS AND THAT

This portion of ACTA CYTOLOGICA is devoted to miscellaneous information. The column THIS AND THAT will publish general news about the Members of the Academy, such as *newly* received awards, honorary degrees, honorary memberships, regular memberships in scientific and medical societies. The chapter will also record speeches of the Members, trips abroad, and personal information such as marriages, anniversaries, and so on. It is intended in this column to make the Members more acquainted with each other.

The Members of the Academy are invited to submit to the Editorial Office any relevant information. This column will also publish information about Non-members insofar as this information is submitted by a Member and is regarded of general interest.

INFORMATIONS DIVERSES

Cette rubrique des ACTA CYTOLOGICA est destinée à des informations diverses. Elle publiera des nouvelles générales sur les membres de l'Académie, comme prix scientifiques recus, distinctions honorifiques, nominations de membres honoraires ou actifs dans des sociétés scientifiques et médicales. Cette colonne rapportera également des discours prononcés par les membres, leurs voyages et donnera des nouvelles personnelles comme mariages, anniversaires, etc. Le but de cette rubrique est de resserrer les liens de connaissance entre les membres.

Les membres sont priés de soumettre au bureau de rédaction toutes les informations pouvant intéresser cette rubrique, qui publiera également des informations au sujet de non-membres, pour autant qu'elles soient présentées par un membre et offrent un intérêt général.

PERSÖNLICHE INFORMATIONEN

Dieser Teil der ACTA CYTOLOGICA befasst sich mit verschiedenen persönlichen Nachrichten. Das Kapitel PERSÖNLICHE INFORMATIONEN enthält allgemeine Nachrichten über die Mitglieder der Akademie, z. B. kürzlich erhaltene Ehrenmitgliedschaften, Ehrenpreise, Ehrentitel, Mitgliedschaften in medizinischen und wissenschaftlichen Gesellschaften. In diesem Kapitel werden auch wissenschaftliche Vorträge der Mitglieder verzeichnet, Auslandsreisen, und auch rein persönliche Nachrichten, wie Eheschliessung, Jubiläum und so weiter. Mit diesem Kapitel ist beabsichtigt, die Mitglieder der Akademie miteinander vertraut zu machen.

Die Mitglieder der Akademie sind hiermit eingeladen, an die Schriftleitung jede Nachricht weiterzugeben, von der sie annehmen, dass diese Nachricht von Interesse für die Mitglieder sein könnte. In dem Kapitel können auch Nachrichten über Nicht-Mitglieder zum Abdruck gelangen, wenn diese Information von einem Mitglied eingereicht wird, und wenn sie von allgemeinem Interesse für die Mitglieder ist.

ESTO Y AQUELLO

Esta parte de ACTA CYTOLOGICA está dedicada a información diversa. El capítulo ESTO Y AQUELLO publicará noticias generales relativas a los Miembros de la Academia, tales como premios recientemente recibidos, grados honorarios, y nombramientos de miembros honorarios o regulares en sociedades científicas y médicas. El capítulo incluirá también discursos de los Miembros, viajes, y información personal tal como matrimonios, aniversarios y asuntos similares. Se intenta con esta sección unir de una manera más directa a los miembros unos con otros.

Los Miembros de la Academia están invitados a enviar a la Oficina Editorial cualquier información de interés. Esta columna también publicará información relativa a No-Miembros, siempre que esta información sea enviada por un Miembro y se considere de interés general.

THE ACTA ENDOCRINOLOGICA CONGRESS took place in Leiden, Holland, from June 16 to June 20, 1958. Professor A. Guerido is the president. The Congress was a meeting of endocrinological societies of Sweden, Denmark, Norway, Finland, Switzerland, Germany and Holland.

H. WERNER BOSCHANN OF WEST-BERLIN, GERMANY, has been invited to be a guest speaker at the Scientific Meeting of the Inter-Society Cytology Council in New York in November.

JOSE BOTELLA LLUSIA OF MADRID, SPAIN, will conduct post-graduate courses in obstetrics and gynecology which will also include courses on exfoliative cytology. The courses last from October 1, 1958, to May 31, 1959. For details write to: Dr. D. Abelardo Caballero Gordo, O'Donnell 48, Madrid, Spain.

JEAN DE BRUX OF PARIS, FRANCE, on May 26-29, 1958, presented a paper on "The Vaginal Cytology of Puberty" at the 19th Assises Francaise de Gynecologie.

JORGE CAMPOS R. DE C. OF LIMA, PERU, has been invited as a guest speaker for the Scientific Meeting of the Inter-Society Cytology Council in New York in November.

LOWELL T. COGGESHALL OF CHICAGO, ILLINOIS, U.S.A., the President of the American Cancer Society, participated in the International Cancer Congress in London in July, 1958.

M. EDWARD DAVIS OF CHICAGO, ILLINOIS, U.S.A., Chairman of the Department of Obstetrics and Gynecology of the University of Chicago dedicated the new Research Pavilion of the Chicago Lying-in Hospital with laboratories of pathology, endocrinology, cytology, bacteriology and chemistry of obstetrical and gynecological research, on June 14, 1958. The Research Pavilion was built with a grant of \$900,000 from the Mothers' Aid Society of the Chicago Lying-in Hospital.

PAUL F. FLETCHER OF ST. LOUIS, MISSOURI, U.S.A., Secretary-Treasurer of the Inter-Society Cytology Council, visited Europe with Mrs. Fletcher and their six children during the months of May, June and July. He visited with European cytologists during the trip.

MARCEL GAUDEFROY OF LILLE, FRANCE, was guest lecturer in the cytology course at the University of Paris in December, 1957.

THE INTER-SOCIETY CYTOLOGY COUNCIL will hold its 6th annual meeting in New York's Statler Hotel, November 13-15, 1958. Dr. Leopold G. Koss (444 East 68th Street, New York 21, New York) is the program chairman. The scientific program of the meeting will consider the following main topics: Cytology of Disseminated Cancer, Cytology and Endocrinology, Cellular Biology, Carcinoma in Situ of the Lung, Early Carcinoma of the Endometrium. A series of informal luncheon discussions is planned in addition to the scientific program. Additional information may be obtained from Dr. Paul F. Fletcher, Secretary, 634 North Grand Avenue, St. Louis 3, Missouri.

JULIETA C. DE LAGUNA OF MEXICO, D.F., MEXICO, presented a paper, "Vaginal Cytology in Cervical Cancer," at the First Medical and Surgical Congress of the University of Puebla in Mexico, D.F., Mexico, July 14, 1958. Dr. Laguna is teaching gynecological cytology to medical students at the University. She has been elected President of the newly founded Mexican Association of Exfoliative Cytology (November, 1957).

LUIS MONTALVO RUIZ OF MADRID, SPAIN, will conduct post-graduate courses on exfoliative cytology from October 1, 1958, to May 31, 1959, within the post-graduate courses of obstetrics and gynecology in the Instituto Provincial de Obstetrica y Ginecologia of Madrid, Spain.

ARNALDO DE MORAES, President of the Brazilian Cytology Society, has been elected Dean of the Medical Faculty of the University of Brazil. Professor and Mrs. de Moraes and their son (who will graduate from medical school next year) visited several medical centers in the United States in June on the way to the International Congress in Montreal. After the meeting, Professor Moraes and his family will go to Europe to attend the meeting of the Gynecological Society in Brussels, in July.

ERNST NAVRATIL OF GRAZ, AUSTRIA, participated in the Second World Congress of the International Federation of Gynecology and Obstetrics in Montreal, Canada, in June, 1958. During July he took part in the International Cancer Congress in London. He is now on a trip to Australia to lecture there, as Visiting Professor, during the months of August and September.

GEORGE N. PAPANICOLAOU OF NEW YORK, NEW YORK, U.S.A., celebrated his 75th birthday on May 13, 1958.

HANNAH PETERS OF BOMBAY, INDIA, participated in the International Cancer Congress in London in July, 1958, and will visit European cytology centers and cancer research institutions for the remainder of the year, 1958.

ABRAHAM E. RAKOFF AND WARREN LANG OF PHILADELPHIA, PENNSYLVANIA, U.S.A., conducted a class in the fundamentals of gynecologic cytology at Jefferson Medical College during the month of May for residents, graduate doctors and cytotechnicians.

JAMES W. REAGAN OF CLEVELAND, OHIO, U. S. A., formulated the essentials for technician training in exfoliative cytology for the Registry of Medical Technologists of the American Society of Clinical Pathology. He prepared the written and practical examinations of cytotechnologists.

HANS RUNGE OF HEIDELBERG, GERMANY, participated in the 2nd World Congress of the International Federation of Obstetrics and Gynecology in Montreal, Canada, in June, 1958. He also participated in the International Cancer Congress in London in July, 1958.

JOSÉ R. DEL SOL OF MADRID, SPAIN, will conduct post-graduate courses on exfoliative cytology from October 1, 1958, to May 31, 1959, within the post-graduate course on obstetrics and gynecology in the Instituto Provincial de Obstetricia y Ginecología of Madrid, Spain.

PETER STOLL OF HEIDELBERG, GERMANY, participated in the International Cancer Congress in London in July; he will also participate in the German Gynecological Congress at Frankfurt in September. He took part in the meeting of the Oberrheinische Gynecology Society in Bern, Switzerland, on May 31, 1958. He presented papers on exfoliative cytology in Nuremberg, Germany, on March 12 and in Bamberg, Germany, on March 26. Dr. Stoll was invited to become an affiliated member of the Royal Society of Medicine of Great Britain. He has been invited to be a guest speaker at the Scientific Meeting of the Inter-Society Cytology Council in New York in November.

JOHN J. SULLIVAN OF AUCKLAND, NEW ZEALAND, who (as reported in Vol. I, No. 1, 1957) was on a world tour to visit cytology centers, had to cut his trip short when Mrs. Sullivan became ill in West-Berlin, Germany. Since he has returned to New Zealand, he has been in charge of the gynecological cytology service for National Women's Hospital.

HUBERT DE WATTEVILLE OF GENEVA, SWITZERLAND, President of the International Federation of Gynecology and Obstetrics, conducted the 2nd Congress of this organization in Montreal, Canada, in June, 1958.

GEORGE L. WIED OF CHICAGO, ILLINOIS, U. S. A., has been elected to membership in the national fraternity, Sigma Xi. He has been invited to become an affiliated member of the Royal Society of Medicine of Great Britain. He participated in the International Cancer Congress in London in July, and presented a paper at the University of Madrid, Spain on July 29.

WANTED OR AVAILABLE

It is the purpose of this column to promote international exchange of cytologists and cytotechnicians, to inform them of open permanent positions, and to inform employers of available cytology personnel. ACTA CYTOLOGICA offers this service free of charge to Members of the Academy and also to Non-members. Persons interested in obtaining permanent positions as cytologists or cytotechnicians or in obtaining temporary fellowships in cytology (teaching, exchange, or training fellowships), and individuals or institutions offering such positions or openings are invited to write giving full information to: ACTA CYTOLOGICA, 5841 Maryland Avenue, Chicago 37, Illinois, U.S.A. Information supplied will be held strictly confidential.

While information received is subject to editing so that it conforms to the style of ACTA CYTOLOGICA, ACTA CYTOLOGICA and the International Academy of Gynecological Cytology cannot and do not assume responsibility for statements made by contributors.

OFFRES ET DEMANDES

Cette rubrique est destinée à favoriser l'échange international de cytologistes et de techniciens en cytologie. Elle renseignera sur les places permanentes vacantes et informera également sur le personnel cytologique disponible. Les ACTA CYTOLOGICA offrent ces annonces gratuitement à tous les membres et également à des non-membres. Les personnes désirant obtenir une place permanente de cytologiste ou cytotechnicien, ou faire un stage temporaire en cytologie (enseignement, échange, training), ou les instituts ou personnes offrant de telles places sont invités à écrire aux ACTA CYTOLOGICA (5841, Maryland Avenue, Chicago 37, Illinois, U.S.A.), en donnant tous les détails. Les informations reçues auront un caractère strictement confidentiel.

Les annonces reçues devront être, pour la publication, rédigées dans le style des ACTA CYTOLOGICA, mais les ACTA CYTOLOGICA ne peuvent accepter aucune responsabilité pour l'exactitude des renseignements fournis par les annonceurs.

STELLENANGEBOTE UND STELLENGESUCHE

Mit dieser Rubrik soll internationaler Stellenaustausch und Stellenvermittlung für Zytologen und zytologisch-technische Assistenten angebahnt werden, indem über offene Stellen und über verfügbares Personal berichtet wird. ACTA CYTOLOGICA stellt diesen Dienst kostenfrei für Mitglieder der Akademie und Nicht-Mitglieder zur Verfügung. Zytologen und zytologisch-technische Assistenten und Assistentinnen, die an vorübergehenden (Lehrstellen, Austauschstellen, Lernstellen) oder dauernden Anstellungen interessiert sind, und Personen oder Institutionen, die derartige Stellen zu vergeben haben, sind gebeten an ACTA CYTOLOGICA (5841 South Maryland Avenue, Chicago 37, Illinois, U.S.A.) zu schreiben und möglichst genaue Einzelheiten anzugeben. Die erhaltenen Auskünfte und Einzelheiten werden streng vertraulich behandelt.

ACTA CYTOLOGICA oder die Internationale Akademie können keine Verantwortung für Angaben übernehmen, die von Beitragenden zu dieser Rubrik gemacht werden.

SOLICITUDES Y OFRECIMIENTOS

El propósito de esta sección es promover el intercambio internacional de citólogos y técnicos en Citología, informar de vacantes en puestos permanentes, y de personal citológico disponible. ACTA CYTOLOGICA ofrece este servicio de una forma gratuita a miembros y no-miembros de la Academia Internacional. Las personas que estén interesadas en obtener becas temporales, o puestos permanentes como citólogos o técnicos en Citología (Enseñanza, Intercambio, Becas de aprendizaje), y, asimismo, las personas o instituciones que puedan ofrecer tales puestos, deben escribir a ACTA CYTOLOGICA (5841 Maryland Avenue, Chicago 37, Illinois, USA) aportando información completa. Esta información será estrictamente confidencial.

Cuando las informaciones recibidas sean para su publicación en ACTA CYTOLOGICA, la Revista, y la Academia de Citología Ginecológica, no pueden asumir, ni asumen, la responsabilidad de los informes o afirmaciones hechas por los contribuyentes.

CYTOLOGISTS AND CYTOTECHNICIANS AVAILABLE

GYNECOLOGIST, Male, Age: 34, citizen of West-Germany, single, graduate of West-German Medical School (M. D. = Dr. Med.)

Medical Training: German Board of Obstetrics and Gynecology (Facharzt). Currently with University Dept. Ob. & Gyn.
Wanted: Traineeship (Paid Fellowship) in Exfoliative Cytology for the period of one year.
Code No.: JMD 2/1/58, in care of ACTA CYTOLOGICA, 5841 South Maryland Avenue, Chicago 37, Illinois, U. S. A.

CYTOLOGIST-GYNECOLOGIST, Female, Age: 34, citizen of West-Germany, single, graduate of West-German Medical School (M. D. = Dr. Med.)

Medical Training: Eligible for German Board of Obstetrics and Gynecology (Facharzt fuer Frauenheilkunde). Completed additional internship and full residency training in Obstetrics and Gynecology in the United States of America.
Cytology Training: (1) in West-German Medical School, Department of Obstetrics and Gynecology and (2) one and a half years full-time Cytology Fellowship in a training center in the United States (approved by the American Cancer Society).
Wanted: Position as gynecologist in charge of Cytology Laboratory (with clinical work if desirable) in the United States of America, Canada, or West-Berlin, Germany.
Code No.: OMD 1/1/57, in care of the ACTA CYTOLOGICA, 5841 Maryland Avenue, Chicago, Illinois, U. S. A.

CYTOLOGIST-PATHOLOGIST, Male, Age: 36, single, graduate from Italian University (M. D.), citizen of Italy.

Medical Training: Pathologist with six years experience after completion of residency.
Cytology Training: Self-trained.
Wanted: Training Fellowship in Cytology or Research Associate in Cytology in Austria, Germany, or Switzerland for 6 to 12 months.
Code No.: LLM 1/1/57, in care of the ACTA CYTOLOGICA, 5841 Maryland Avenue, Chicago, Illinois, U. S. A.

GYNECOLOGIST, Male, Age: 33, citizen of Denmark, married, graduate of Danish University (M. D.).

Medical Training: Completed internship and residency in Obstetrics and Gynecology, and 3-1/4 years staff member in University Hospital.
Cytology Training: None.
Wanted: Training Fellowship in Cytology in Great Britain or Central Europe.
Code No.: ANV 1/1/57, in care of the ACTA CYTOLOGICA, 5841 Maryland Avenue, Chicago, Illinois, U. S. A.

CYTOTECHNICIAN, Female, Age: 25, single, citizen of the United States of America, University Graduate.

Cytology Experience: Presently Chief-Cytotechnician in cytology laboratory in a Medical School in the United States of America. This particular laboratory is a training laboratory approved by the American Cancer Society, co-author of several scientific publications on cytology.

Wanted: Teaching Fellowship for 3-4 months to organize, set up, or modernize cytology laboratories. Would consider India, Australia, New Zealand, Ireland, or Africa. Will return to present position in United States upon completion of fellowship.

Code No.: UG 1/1/57 in care of the ACTA CYTOLOGICA, 5841 Maryland Avenue, Chicago, Illinois, U.S.A.

CYTOTECHNICIAN, Female, Age: 32, citizen of West-Germany, single, registered medical technician.

Cytology Experience: Chief-Cytotechnician 7 years in cytology laboratory of a University Department of Obstetrics and Gynecology in Germany. Experienced in cancer cytology, endocrinological cytology and hematology.

Wanted: Exchange fellowship for a period of several months with a cytology center in the United States of America, Brazil, or Argentina. Will return to present position upon completion of fellowship.

Code No.: RU 1/1/57, in care of the ACTA CYTOLOGICA, 5841 Maryland Avenue, Chicago, Illinois, U.S.A.

CYTOLOGISTS AND CYTOTECHNICIANS WANTED

TRAINEES IN EXFOLIATIVE CYTOLOGY WANTED in Laboratory of Exfoliative Cytology in a Medical school in the United States of America. The prospective applicants must be either citizens of the United States of America, or have taken out citizenship papers (immigrant); must be high school graduate or have equivalent credits with some training in biological sciences; no physical or mental disabilities that would interfere with training or restrict services as a cytology technician after training. Trainees will be awarded a stipend for a period of six months at the rate of \$225.00 per month.

Write to: ACTA CYTOLOGICA, 5841 Maryland Avenue, Chicago, Illinois, U.S.A. and refer to: U.S. Public Health Service Traineeship.

CYTOTECHNICIANS WANTED for the Laboratory of Exfoliative Cytology of the University of Chicago Clinics. The prospective applicants should be high school graduates with 18 semester hours of courses in biological sciences who want to make cytology his or her career or/and who has had previous training in exfoliative cytology. The salary is adjusted according to the regulations of the University of Chicago Personnel Office.

Write to: George L. Wied, M.D., Chicago Lying-In Hospital, Chicago 37, Illinois, . . . U.S.A.

CHIEF-CYTOTECHNICIAN WANTED for the Cytology Laboratory of the Cancer Cytology Survey Program of Rhode Island.

This senior cytology checker will be given a supervising duty as well as an opportunity to teach cytology students. The salary is \$4862 per annum. The work week is 35 hours with two weeks and three days vacation per year.

Write for details to: Dr. Y. S. Song, Director in Charge (Pathologist) for Cancer Cytology Survey of Rhode Island, 593 Eddy Street, Providence 2, R.I.

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